Scientific American.

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. XV.---No. 20. [NEW SERIES.]

NEW YORK, NOVEMBER 10, 1866.

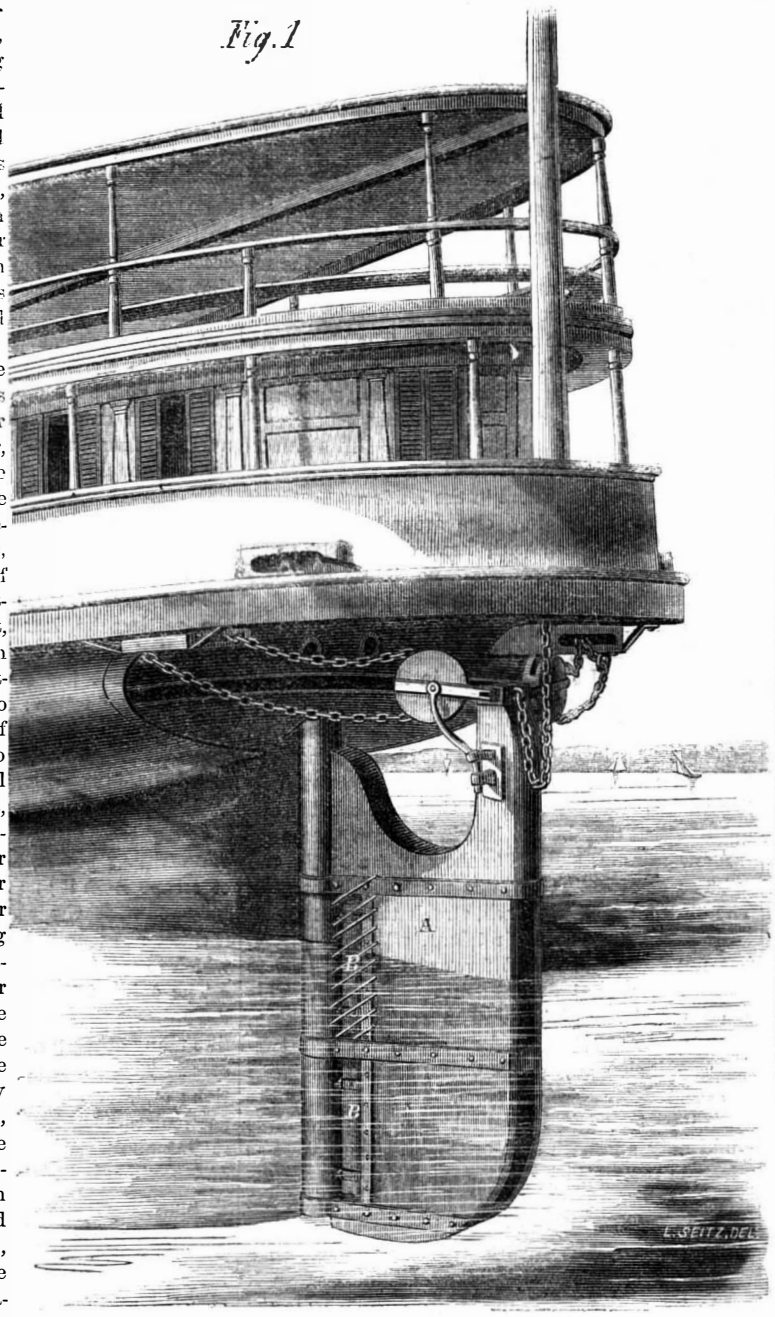
$3 per Annum, [IN ADVANCE.]

Improved Rudder.

Sometimes, owing to causes difficult to comprehend, a vessel every other way satisfactory, is not readily obedient to her rudder. She moves from the course of her run sluggishly, although ample ordinary steerage way is obtained. Such a quality in a ship or steamer endangers life and property, and to obviate these defects, which, in many cases, are fatal, is the object of this improvement. It is, in fact, a double rudder, having four instead of two resisting surfaces, and is claimed to give greatly increased power over the movements of a vessel. On the lakes, the navigation of which is attended with greater peril, at times, than on our rivers or the sea, it is said this rudder has proved very effective.

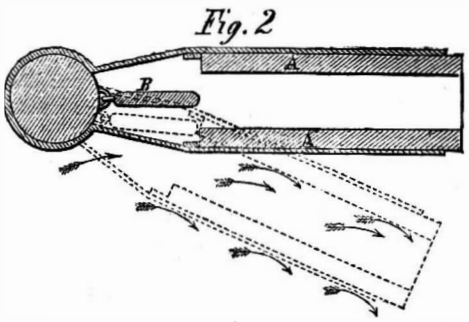
As may be seen by the engravings, the rudder is hollow. From the rudder post two pieces of timber, one at the top and the other at the bottom of the rudder, are fixed, and secured to them are leaves, A, which form the sides of the rudder. These do not extend to the rudder post, but leave a space in which are hung two supplementary rudders, B, pivoted to the post and capable of swinging sufficiently to close the aperture. It will be seen by the arrows, Fig. 2, that if the rudder is turned "a-port" or "starboard," the water rushes against the other side of the rudder, closing the leaves, B, and directing the force of the water against the opposite inside of the main rudder, while it operates against the outside in the ordinary manner; this, it is claimed, gives double the resistance offered by the solid rudder. The upper portion of the space is protected from floating weeds, wood, etc., by bars, so that the free action of the automatic leaves may not be hampered. Nautical men will at once understand the merits of this invention.

Fig. 1



LE PELLEY'S SHIP'S RUDDER.

Fig. 2



It was patented through the Scientific American Patent Agency by N. D. Le Pelley, Cleveland, Ohio, March 14, 1865. Patents have also been secured in foreign countries through this office. For further information, rights to build, etc., address W. L. Wetmore, Marquette, Mich.

THE *American Journal of Mining* states that seven more deep-sea telegraph projects are now on foot, three of which are to be constructed by Americans, three by English capitalists, and one to be a French line. The first is to extend from Cape Charles (opposite Fortress Monroe), to Lisbon, in Portugal, via the Bermudas and Azore islands. The second line, already contracted for, is to connect Falmouth, England, with Halifax, touching also at the Azores. Third, the North American Telegraph Company, proposes to join Scotland, the Faroe Islands, Iceland, Greenland, Labrador and Canada, by a double line of cable. Fourth, the Russo-American line. Fifth, the French company's route is via Lisbon, the Canary and Cape Verde Islands to Cape San Roque in Brazil, thence to Cayenne in French Guiana. The sixth is designed by an American company, to pass from Florida to Cuba, thence to St. Domingo, thence to Porto Rico; also from Cuba to Jamaica, and thence to the Isthmus of Panama. The last line is from New Zealand and Australia, to connect with the Anglo-Indian line, and also a land branch through China to meet the Russo-American line.

MISCELLANEOUS SUMMARY.

JAMES H. PEASE, of Reading, Pa., a driver on the Reading railroad, has invented an improvement for feeding locomotive boilers, which has been tested practically on a number of locomotives, and is said to work admirably. It is simply the connecting of the injector and feed pump with the same pipe, thereby dispensing with one suction and feed pipe, with the necessary connections. Only one check valve is required, and no frost pipe is necessary. A stop cock is placed in the overflow of the injector, and by means of a three-way cock, steam can be blown through the connection into the pump to prevent its freezing.

IN the six months ending June 30th, the British rainfall amounted to 17 inches, more than in the whole of the year 1865, and yet we look back on those six months as a period of fine weather. Since June there has been a rapid increase in the quantity. In Gloucestershire, 10 inches fell in eight weeks; and in Dorsetshire, more than 7 inches in twenty-five days. The total fall, from January to September inclusive, was more than 30 inches. Excessive as this quantity may appear, it will not do more than restore the balance which had been disturbed by the unusual dryness of the three former years.

TAKING into consideration the very destructive results of modern artillery when applied against granite fortifications faced with iron, or having embrasures of that metal, as developed by our own experiments at Shoeburyness and those at Fortress Monroe by the American Government, it has been decided by the engineers of the War Department to alter the construction of the Spithead forts from a combination of granite and iron to one entirely of iron of the most massive character.—*Engineer.*

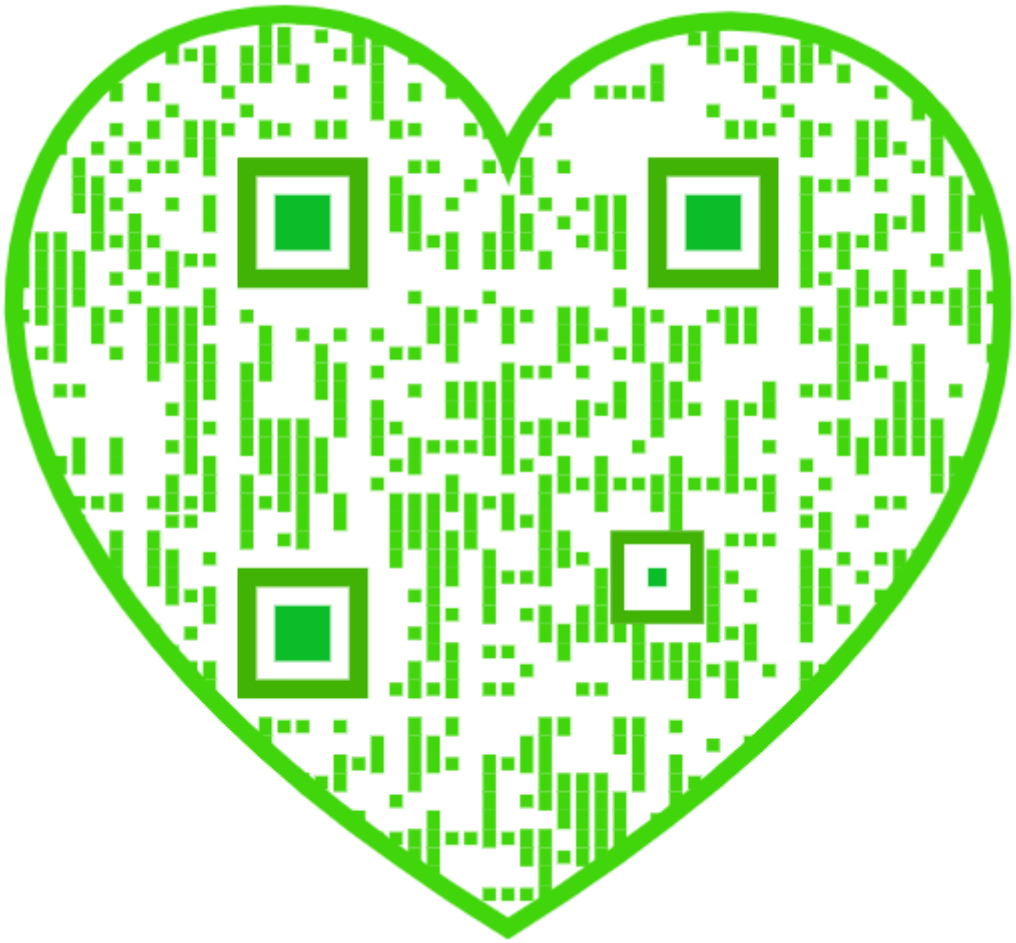
IN preparing pure caustic alkalies, M. Graeger, having brought the alkaline carbonates to such a state of purity that they only contain traces of chlorides, first treats them with carbonate of silver, and then boils them with lime from calcined marble. The lye is then filtered through a funnel, in the bottom of which are placed fragments of marble and powdered marble, first pouring distilled water through till it passes perfectly limpid.

PERSONAL.—Joseph Barron, of Mobile Ala., writes to us complaining that he does not receive replies to his letters, and wants to know why we do not pay some attention to his business. The answer is plain. We have now before us one of our letters addressed to Mr. Barron, returned "unclaimed" through the dead-letter office. This is the third letter to him which has been returned to us. There must be something wrong at the Mobile office.

WE call attention to the advertisement of Jenkins's patent globe valve, which seems to possess real merit. The bottom of the valve is provided with a slightly elastic rubber disk, which makes it perfectly tight, and prevents leakage even if particles of sand or other impurity should sometimes be present. Wear of the valve seat is also prevented. Engineers speak well of this improvement.

Work with an abundance of vitality is a pleasure; with exhaustion, a labor.

© 1866 SCIENTIFIC AMERICAN, INC.



[For the Scientific American.]

CHARMING BY SERPENTS.

The power of serpents to charm the smaller classes of animals, which they capture for food, has long been held as an undoubted fact. It has also been believed that they could fascinate the larger orders of animals, so as to bring them within the range of their deadly fangs; and that even the intellect of man is not exempt from their influence. The common theory upon this subject gives to the serpent supposed to have the power of fascination an ability to gain the attention of its victims, to paralyze their volitions as if by an electrical influence, and to attract them toward itself as if by magnetism.

Birds, more generally, are suppssed to be the victims of these charms. They have been seen moving around serpents in such a manner as to indicate, in the opinion of a certain class of observers, that they were under the power of fascination. The testimony upon this point describes the bird as moving in a circle, or semicircle, around the serpent. If upon the ground, they run, with extended wings, gradually narrowing their circle of motion, but never stopping for an instant, till within a foot or two of the serpent. Then, as if conscious of their peril, and just at the momont they are about to be seized, they fling themselves backward upon the wing, so as to be out of the reach of their terrible enemy. The birds, thus escaping for the moment, stop and survey the foe from their distant position. This seems to be a fatal dallying with danger. The serpent's eye, quick as the lightning's flash, again darts its mysterious magic into theirs; and again, and again, they advance and recede, as if drawn irresistibly toward the point which has become the all-absorbing center of attraction. If the serpent is upon a tree, the bird flutters around it, advancing and retreating as when upon the ground.

The popular interpretation of these movements is this: the serpent establishes a connection between itself and them, by which it controls their wills, and draws them within its reach. In accomplishing this object, it does not go in pursuit of them, but lies in coil, with head erect, awaiting their approach. It appears, however, that the serpent's power has its well-defined limits, and its own peculiar philosophical phenomena.

If the movements of birds toward it are due to the attractive powers employed by the serpent, then the law of attraction, in this case, is a positive reversion of the laws of magnetic attraction. The attractive power of the magnet is greatest when the body acted upon is in contact with it, and it loses its force in proportion to the distance to which that body may be removed. That is to say, it requires more force to remove a piece of iron, when in contact with a magnet, than is required for its removal when at a distance of several inches from it But such is not the case of the serpent's power of attraction. In the supposed fascination, the birds, though unable while at the distance of ten or a dozen feet, to resist its attractive powers, are able, nevertheless, at the last moment, when the devourer is in the act of striking, to break the charm, and, by a reverse movement, to fling themselves instantly out of danger's way. Thus it appears that when the birds are at a distance the serpent can draw them within its reach; but that, when they come in close contact, its attractive power is lost, and they can retreat without hindrance.

Such is the theory of fascination, as based upon occurrences that have been witnessed by many observers. Its philosophical defects may be inferred from the hints already given; but whether such transactions prove that serpents possess the power of fascination, or that the observers have been mistaken in their deductions, will be better understood when a case is stated which was witnessed by the writer.

Business led me to cross the Chilhowee Mountain, in Tennesee, on the 27th of June, 1857. When near Montvale Springs, two birds were noticed, at a couple of rods' distance from the road, which were acting in a manner new and strange to me. They were in an open space, near the stump of a fallen tree, but did not take flight at my approach, as, under ordinary circumstances, they would have done. On reaching a point opposite to them, it was noticed that they were the brown mocking bird or thrush, and that a very large black snake lay coiled at the side of the stump. On seeing me, it suddenly began to uncoil itself, and move off as if to make its escape; the birds at the same time pausing a moment in their movements. But before it had stretched itself to more than half its length, they were again in motion, and flew at it in the most energetic manner. Instantly, the snake whirled itself into coil in its former position. The male bird then commenced to run and skip with great activity, in a semicircle, the serpent being the center, and gradually closed in until within a foot or two of its coils, when, with a sudden dart forward, the bird thrust its head toward that of the snake, and, in the same instant, threw itself backward, alighting on the ground at the distance of about ten feet. Before the male had closed this feat, the female had commenced a similar set of actions. All the movements of the birds were made with extending wings, as if ready to fly in a moment. By the time the female had thrown itself back from the snake, the male was in position again, repeating the same movement as at first. In the meantime my horse had carried me some four or five rods into a thicket of bushes, whither my hand had guided him, and where I dismounted and secured him. All this took place in a minute or two; and as only an indistinct view had been gained of the action of the birds in passing, a favorable position for observation was taken, so that all that occurred could be noted. The first movement of the male bird, in thrusting its head forward into close contact with the snake, impressed me with the conviction that a case of the so-called fascination was enacting before me, and I determined to observe it in a philosophical manner.

It was half-past one o'clock, P. M. The birds were still eagerly at work when I turned my eye upon them, after the interruption of hitching my horse. They were panting, as if greatly fatigued by long exertion, but manifested not the least disposition to remit their efforts. If not fascinated, they were, at least, so earnestly enlisted in the affair on hand, as to disregard everything else around them. The snake lay in its coil, with head erect and drawn back, so as to be in the best possible position to strike and seize the birds as they advanced. The many convolutions of its lengthened body moved in graceful curves, as its glittering head followed their motions. Its eye sparkled in the sunlight like the polished diamond, while its movements gave to its ever-shifting scales the brilliant hues of the rainbow. Again and again, as the birds approached, it would strike at them with open mouth, exhibiting a malignity of disposition that portended death to them had they been seized in its jaws.

A few minutes sufficed to show that a battle, and not a scene of fascination, was presented before me. The birds, at each approach, struck the snake with their beaks, or with their talons, when, generally, but not always, it darted forward at them, only to find that it was aiming at a movable target. This can be easily explained. The snake, in striking, could never project itself more than about two-thirds of its length, but its defense was made with the most determined courage. Its position by the stump protected it in the rear, so that the birds could only approach it in the front. They were as adroit in their attacks as it was resolute in its defense. In attempting to seize them, it could not curve to either side, after starting, so as to follow their motions, but invariably shot forward, in a straight line, to the point they occupied when it made its spring. The birds, in advancing to the attack, by a circular movement, were certain of being away from the spot at which it aimed, and when its teeth smacked together, where it expected its prey, it had nothing in its grasp.

The warfare lasted, after I reached the spot, about twenty-five minutes by the watch. Once or twice during the contest, the reptile made a movement to escape up the hillside, but the birds, as at its first attempt, immediately brought it into position again. At last, seeming to despair of success in securing a dinner in that locality, it darted off down the hill, toward a grove of trees and bushes, nor turned to the right or left. The birds swept after it, pecking, scratching, and striking it with their wings, as if inspired with the consciousness that victory was theirs.

At this moment I rushed forward, and, after some difficulty, killed the snake and cut it open. There was not a particle of food from one end to the other of the intestinal canal. It must, therefore, have been hungry; and if it possessed the faculty of charming, it would undoubtedly have employed its powers on such a delicacy as these birds.

When the dissection of the snake was finished, the birds were not to be seen. It was the season when their young were in the nest; and, doubtless, the conflict which had just terminated, had been waged for the protection of their offspring. Less active birds, venturing as close as they did to their enemy, must have been captured.

Remaining most of the summer in the mountains of North Carolina, frequent opportunities were afforded of inquiring of hunters and others, what they knew about birds being charmed by serpents. All believed in the theory of fascination, and several had witnessed encounters such as I have described; but none had ever seen the snake seize the bird. They had looked on until the bird, under the influence of the charm, as they supposed, was attempting to thrust its head into the serpent's mouth, when they had rushed forward and killed the serpent to save the bird from destruction. In all the inquires made, no instance has been related where there was any more evidence of fascination than in the one observed by myself. In all cases, however, there was a singular uniformity in the descriptions of the manner in which the birds fluttered around the snakes. So nearly did their accounts correspond with what I had witnessed, that I was convinced of the truthfulness of their statements.

A few additional facts, having an important bearing on the subject of fascination, came under my own notice during 1859. In the summer of that year, some amusing incidents led me to secure a number of serpents of different species; and, among them, a couple of fine specimens of the rattlesnake. This serpent is somewhat sluggish in its movements, and, unlike many other species of its order, it is not an active climber. While many of the others can with ease ascend bushes, trees, and precipices, to rob the nests of birds of their eggs or young ones, the rattlesnake, less agile, has to find its prey in a more limited range. For this reason, it has been supposed that the rattlesnake must possess the power of fascination: otherwise, it could not secure, as it does, such active animals as mice, rats, squirrels, rabbits, and birds; for, as has been plausibly asserted, this serpent, assuredly, will not use poisoned food—will not first strike the animals it designs to eat; and then, some of these animals are combatants of no trifling power, and could easily kill the snake or escape from it; so that, unless the rattlesnake is endowed with the ability to fascinate, it is averred it could not possibly capture sufficient food upon which to subsist.

The opinion that venomous serpents do not eat the animals they kill by the poison of their fangs, like many other popular notions, turns out to be an error. This I know from my own personal observation; and, for the satisfaction of naturalists, a few particulars are given. One of my specimens of the rattlesnake was placed in a box, covered with glass, and having a wooden lid secured by lock and key. A few small holes, for ventilation, were made in the sides of the box, but too small to allow the escape of even a mouse. Birds, when put into the box containing the rattlesnake, would often hop around and over it for hours unmolested; but at length, when in a favorable position, the snake would strike the fatal blow, and death ensue in a few minutes. One instance, only, need be noticed; a half-grown bird, when struck, at once commenced screaming, with wings outstretched, and, turning round once or twice, seemed to droop and sicken rapidly. In three or four minutes from the moment it was bitten it fell forward toward the mouth of the rattlesnake and expired. The movements of this bird were in accordance with such actions as have been observed, in cases where fascination alone was supposed to be employed. In this case, the charm was a fatal one, truly, being nothing less than the poison of the serpent coursing through its veins.

The birds placed in the box were not swallowed by the rattlesnake, seemingly, as afterward ap-

© 1866 SCIENTIFIC AMERICAN, INC.

peared, because it would not encumber its jaws, so as to be unprepared for defense while the human eye rested upon it. In experimenting on the non-venomous species, it was found that they, also, would not take their food when any person was present; but that, when alone and secure, they would eat ravenously; one of them, the common bull snake, having eaten nine young birds in a few hours. Profiting by this discovery, a rat, two-thirds grown, was thrown to the rattlesnake, when it immediately struck it twice. The victim soon exhibited signs of dying, and the box being closed and locked, all present left the room. Upon examination fifteen minutes afterward, the rat had been swallowed, and the serpent's thickness proportionally increased.

By this experiment, and others similar, it was ascertained that the rattlesnake does eat food that has been poisoned by its own venom;* and that it is probable that it always captures its victims by striking them, as, unconscious of danger, they pass its place of concealment; the poison of its fangs being a much more efficient agency than the fascination of its eyes.

It may be remarked, in explanation, that, although the poison of serpents, infused into the veins and arteries, is always fatal to the smaller animals, yet it may be received into the stomach without injury, as it is easily digested, and exerts no prejudicial influence upon the system. In the smaller animals, killed by the bite of the snake, no inflammation, no swelling of the body, takes place, as in the case of the larger animals, for the reason that the extinction of life occurs too soon to allow of any such effects.

If, then, the venomous serpents eat as food the animals killed by their own poison, and the non-venomous species can climb almost everywhere that birds build their nests, where is the necessity of any of these reptiles being endowed with the powers of fascination? They possess the means of attack and defense, independent of that power, in a degree fully equal to the necessities of their existence, and, in this respect, are not behind any other order in the animal kingdom. Why, then, should they be given such an advantage as fascination would confer, over the other orders of the irrational creatures? But I need not prolong my remarks on these topics.

*Prof. Pratt, late of Tuscaloosa College, adds his testimony to the above, thus: "The rattlesnake does eat the mouse after killing it with its poisoned fangs. I have seen this done."

ENGRAVING FOR CALICO PRINTING.

It is surprising how much of taste and educated fancy is bestowed on the production of the commonest articles. The love of beauty and the desire for ornament furnishes employment to thousands, and gives additional value to that which would before have subserved its purposes of use or necessity. The common calico prints and muslin-de-laines are cases in point. In one instance the fabric is of cotton, and the other, of cotton and wool, the useful qualities of which are in no wise bettered, if they are not really injured, by the process which makes them more agreeable to the eye. But their decoration with figures greatly enhances their value in the eyes of purchasers and wearers. And a great deal of talent, artistic and mechanical, is employed on this work.

The designing of the pattern is a preliminary to the engraving, as that is to the printing. For this purpose men of artistic tastes are employed, although they are not always required to originate the designs used. In many cases the patterns are copied from specimens sent from France and England, which are sometimes surreptitiously obtained by secret agents, who may be employed in foreign manufactories. We have known of instances where an enterprising manufacturer of cotton prints, by this means, put into the market *fac-similes* of English goods before the first invoice was imported from England, and thus forestalled the market. It is no uncommon occurrence, also, to find prints bearing the name of English or French houses which were spun, woven, and printed here; and so exact has been the imitation, that we remember a case where the wife of one of the most extensive calico printers in Rhode Island, on a visit to New York city, purchased an elegant piece of "French" calico, which had actually been printed at her husband's works not a quarter of a mile from her house.

The design is made in duplicate, or rather there is a "sketch" and a "pattern." The first gives the outlines of all the figures drawn in india ink, without coloring. The design is just as large as the "pattern" proper; that is, it comprises the "pattern" once only, which is reproduced indefinitely on the fabric. The "pattern" is a correct representation of the design, perfectly colored, and frequently more beautiful than the figures after being printed on the fabric. The object of the "pattern" is to guide the engraver as to the depth of his lines and to designate the colors.

The design, or outline, being sent to the engraver, he prepares a cylinder of steel, the length of which corresponds with the width of the design, and the circumference with its length. This cylinder is nicely polished and perfectly annealed, being made of the best refined cast steel. It is coated with a varnish of Canada balsam, the sketch being placed upon the steel and rubbed with a hard instrument. The *fac-simile* of the design is impressed upon the varnish, and the engraver begins his work. Now the colored pattern is brought into service. Experience teaches the engraver that for some colors the depth of the engraving must be much greater than for others; as some colors require much of their substance to penetrate the fibers of the fabric, while others seem to have an affinity for the cotton and easily saturate it.

The first "die" is engraved in outline as the "sketch." It is called the "outline die." After being engraved, impressions are taken from it and transferred to similar cylindrical "dies," one for each color and shade, the colored pattern being again called into requisition to guide the workman's graver, as he who is cutting the black must be careful not to infringe on the department of the red or the green, although he has on his "die" the outlines of all the colors. The engraving of these dies is done wholly by hand, and is a work of such nicety that it is intrusted only to experienced hands. Much depends upon the engraver's judgment. If he is engraving a broad leaf, for instance, the bottom of the depression is "cross-hatcheled," that is, scored diagonally twice, like the teeth of a cross-cut file. The intention is to retain by the uneven surface a large amount of color. Other and narrower depressions are scored but once across, while fine lines are not scored at all.

The impressions from the outline "die" are not taken in the same way as that from the paper sketch. The "die" is rubbed over with powdered lampblack, from which the oil has been expelled by roasting at a red heat in an iron vessel. The lampblack remains in the engraving, and that on the smooth surface is removed by the hand. A piece of common white letter paper is then coated with ordinary yellow bar soap, placed, soap side down, on the die, and rubbed with a steel spindle. This transfers a portion of the lampblack in the lines to the soaped paper, which is then placed upon a smooth "die," coated, as the first, with Canadian balsam, and rubbed with the steel. The lampblack outline is, of course, left upon the surface to guide the engraver.

For each color and shade, as before remarked, a separate "die" is used. The figures are in intaglio or sunk below the surface. As these "dies" are seldom or never more than six or seven inches long and two in diameter, they are not suitable for printing the calico from, and other processes are employed before the printing is reached.

The "dies," after being engraved, are hardened. Other cylinders of soft steel are prepared which hold in size a certain ratio to the "die." If the pattern is small the "die" must be small. Some are not more than three-eighths of an inch diameter. The cylinder to which the engraving of the "die" is to be transferred is either exactly the size of the die, twice thrice, or four times its diameter. This cylinder is called a "mill," and has journals or pivots turned on each end. A machine technically denominated "the clams" is the instrument for transferring the engraving of the die to the "mill." It has two parallel rollers, revolving close together, on or between which the hardened "die" is placed and by which it is rotated. Over these are two journal boxes, adjustable, so that the "mill" can be guided by its journals. The "mill" is placed on the die held by these boxes, and by means of a powerful screw is forced strongly down upon the upper surface of the "die," when the "die" and "mill" are made to revolve together. The pressure is not sufficient to produce a perfect pattern of the engraving on the soft "mill," but from time to time it is taken out, the pattern made by the "die" is painted with an "etching ground," composed mainly of asphaltum, and the mill is revolved in a dish of sulphuric and nitric acid and water for a few moments, when the unprotected surface is etched away, or rapidly oxidized. Returning it to "the clams," in connection with the "die," sharpens up the impression, until after repeated operations the design of the intaglio "die" is produced on the surface of the "mill" in bold relief. To insure the rotation of the "mill" in perfect coincidence with the "die" longitudinal scores are cut on its circumference at each end, beyond the pattern, which, by forming corresponding teeth on the mill, actuate the two cylinders as cog wheels.

The "mill" being hardened, is now ready for engraving the copper roller which is to print the calico. These rollers correspond in length to the width of the cloth to be printed, and bear a similar relation in diameter to the "mill" as that did to the "die." The rollers are hollow and are sometimes called "shells." A mandrel is thrust through them having journals at the ends, and the roller and mandrel are placed upon a machine horizontally. The "mill," by means of a sliding head-block, is brought in contact with the roller and its relievo figures impressed into the copper by means of a weighted lever in combination with rotation. As the "mill" transfers its pattern to one section, it is moved along the roller a distance corresponding to the width of the pattern, when the operation is continued, until the roller is covered with the engraving. Sometimes, to aid in this process, etching is resorted to. The surface or unengraved parts of the roller are covered with the "etching ground" and the roller revolved in a trough of diluted acid. This rapidly eats the copper and assists the operation of "milling." As in the "dies" and "mills" the rollers must equal in number the colors required. After being engraved the rollers must be ground, as a burr has been thrown up all around the edges of the figures. For this purpose hollow stones are employed, or rather blocks of stone hollowed to fit the segment of the roller's diameter are used, by being held on the roller as it revolves in water. The surface being polished, the rollers are ready for the printing machine. A description of the process of machine-printing we reserve for another issue.

Recipe for Curing Meat.

To one gallon of water, take 1½ lbs. of salt, ½ lb. of sugar, ½ oz. of saltpeter, ½ oz. of potash. In this ratio the pickle to be increased to any quantity desired. Let these be boiled together until all the dirt from the sugar rises to the top and is skimmed off. Then throw it into a tub to cool, and when cold, pour it over your beef or pork, to remain the usual time, say four or five weeks. The meat must be well covered with pickle, and should not be put down for at least two days after killing, during which time it should be slightly sprinkled with powdered saltpeter, which removes all the surface blood, etc., leaving the meat fresh and clean. Some omit boiling the pickle, and find it to answer well, though the operation of boiling purifies the pickle by throwing off the dirt always to be found in salt and sugar. If this recipe is properly tried, it will never be abandoned. There is none that surpasses it, if any so good.

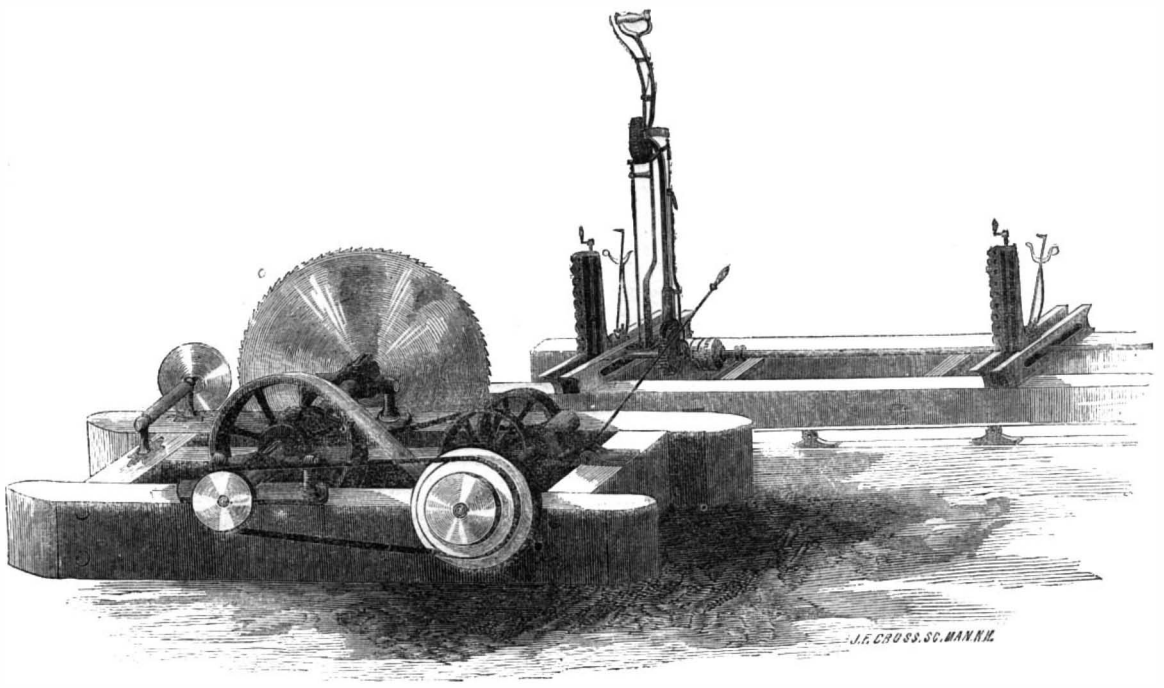
THE London *Lancet* says:—"Among the uses to which the Atlantic cable has been put is one which would hardly be anticipated. A correspondent communicates to us a telegram which he received from a patient who, being seized with a renewed attack of illness, from which he had suffered in this country, and for which he had been successfully treated, telegraphed to his old medical attendant for directions. These were returned by the same channel, without delay, and we hope they have prospered, and that the proper remittance will follow by an early packet. This prescription will rank among the curiosities of telegraphy."

© 1866 SCIENTIFIC AMERICAN, INC.

Improved Upright Saw-mill Set.

The annexed engraving gives a perspective view of Stanton's patent lever set for securing logs in circular-saw mills, which is now extensively used, giving entire satisfaction. Its peculiar advantages are, that the knee heads may be moved simultaneously, or separately; that they are operated by means of a lever, pawl, gear, rack, and ratchet, which give a great lateral motion instantly; that the weight of the log is partially removed from the ways, reducing the friction; that it dispenses with the services of one man, and obviates the necessity of turning the log.

The uprights traverse slotted iron beams placed transversely across the carriage, and are worked by means of a shaft, with pinions which mesh into a fixed rack on the lower portion of the transverse beams, and, also, with similar racks formed on the base of the sliding uprights. The shaft is operated by an upright lever working a pawl on the shaft, which gives a uniform motion to each upright. These uprights can be connected or disconnected at will by another lever which moves sliding clutches. After the log has been sawed the blocks may be thrown back instantly to receive another log, thus saving the time usually required where the blocks are operated by screws. An indicator, directly in front of the operator, is graduated so that he can determine at once how much set forward to give the log for any required thickness of lumber. The log is held by the usual dog, and, in addition, a pointed screw, which is set by a hand wheel into its substance. Screws passing upright through the knee blocks carry spurs which "take" into the lower part of the log, holding it partially free from the carriage so that there can be no friction by dragging.



STANTON'S LEVER SET FOR SAW MILLS.

It is not liable to get out of order, and is claimed to save in time and lumber thirty-five to forty-five dollars on every 100,000 feet sawed, as there is no loss of time in setting, and both ends of the log are moved exactly alike, thereby preventing waste from imperfect sawing.

It was patented through the Scientific American Patent Agency, May 1, 1866, by J. M. & S. F. Stanton, of Manchester, N. H., to whom apply for machines or for additional particulars. Stephen Heald & Sons, Barre, Mass., manufacture the machines.

POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

The Association held its regular meeting at its rooms at the Cooper Institute, on Thursday evening, Oct. 25th, Prof. Tillman in the chair.

Previous to the regular subject, a discussion was carried on, questioning the expediency of using the beam engine on sea-going vessels. The work for which Watt employed the first steam engine required this particular form of construction. Introduced, a wide-spread prejudice has since existed in favor of this style of engine in preference to any other form. However strongly braced, the strain on the beam and gallows frame must tend to weaken the vessel in a heavy sea. A portion of the works must be entirely exposed to the weather, and the deck can never be closed, hence the danger of swamping when heavy seas are shipped.

DISINFECTANTS.

Prof. Tillman introduced this subject, the regular topic for the evening's discussion, in an article defining the signification of the term, and enumerating all the more valuable disinfectants now in use. This class of substances should not be regarded as synonomous with those chemical agents known as deodorizers, for the difference is essential; the latter may act as a palliative, or simply overpower, dissipate, or disguise the gaseous products arising from that which constitutes the cause of disease, while true disinfectants attack and destroy the very roots of the evil. Taking the four elements of the ancients as the type of division under which to rank the generally received disinfectants, we note, under the first, that the soil is capable of absorbing indefinitely, injurious vapors. This property, possessed by porous bodies in general, is held by charcoal in a remarkable degree; for not only does this absorb, but also, by bringing the particles into close contact, it hastens decomposition. Second, water, as a solvent, removes the source of disease, and, in connection with the soil and the air, constitutes the grand disinfectant of nature. Third, no better purifying agent exists than a plentiful supply of pure air. Among the gases, chlorine is the best known, which, chemically combined with lime, has been extensively employed. All the bleaching agents are also disinfectants; among these ozone is said to be the best. Sulphurous acid has, in all ages, been used and highly valued; it acts as a deodorizer, and by its antiseptic qualities impedes fermentation. Fire, lastly, is acknowledged as one of the best disinfecting agents known.

The generally received theory assuming the presence of some specific poison or deleterious matters in the atmosphere, was disputed by Dr. Bradley, who advanced a hypothesis, supposing that malarious diseases are produced not by any specific poison in the atmosphere, generated from decomposition of vegetable matter or miasmatic emanations of any kind, but from a cause negative in its character, viz., the want of the normal depuration of the animal organism. The matters in the human body which have served their purpose and have become effete, must be regularly expelled, or they act as a virulent poison within the system. Free perspiration under the stimulus of heat or exercise being among the most important functions by which the depurative process is performed, in the absence of such stimuli, another auxiliary, viz., the atmosphere, having an affinity for the exhaling matter, is required. In a healthy state of the atmosphere, such affinity is an active positive force of great power, but it may be sated in various ways; this occurs when the temperature of the air and the dew point approximate. An excess of carbonic acid has also a powerful effect in satisfying the power with which the atmosphere is otherwise endowed, of carrying off the effete carboniferous matters. During the spring and early summer, carbon is assimilated by the luxuriant vegetation, and the atmosphere is purified, but later, when plants begin to decline in growth, the air becomes charged in larger proportions with carbonic acid; to this, and to the fact of the greater amount of aqueous vapor in the air at this season, is due the prevalence of malarious diseases during the fall of the year. In crowded hospitals or ships, the atmosphere becomes charged with the refuse matters which have already served their purpose. The deleterious effects of inhaling these matters are small compared with the effects of depriving the air of its absorbing tendency. The conclusion, then, seems evident that malarious diseases are caused by the effete excrementitious matters of which the system has failed to be properly depurated, on account of the lack of an atmosphere having an affinity for such excretions, and the consequent deprivation of this auxiliary in the performance of the perspiratory functions. Any thing, then, that tends to desiccate or dry the air, or to enlarge its capability of absorbing and dissolving the fluids of perspiration, is a true disinfectant. Fire increases the power of evaporation; chloride of calcium and other deliquescent salts, by their attraction for moisture, tend to dry the air, and hence stand so high as purifiers. By the application of water the pores of the skin are opened, and thereby healthy action in the performance of its excretionary functions is stimulated.

The views here presented were enlarged upon by the members, and the remainder of the evening was devoted to the presentation of facts, substantiating, essentially, the above hypothesis.

Important Decision---Does "Cash" Mean Gold?

A decision in the United States Circuit Court (Judge Smalley presiding), of more than ordinary interest to business men, was made on the 24th inst. William Chamberlain and others, in November, 1862, chartered from Lawrence Gladston and others, the British brig *John of Gaunt* to bring a cargo from the Island of Ceylon to the United States, and in the contract agreed to pay plaintiffs $29,000 cash, in consideration thereof. On the delivery of the cargo the defendants paid the above amount to plaintiffs in legal tender notes, and contended that that was a discharge of their obligation. Plaintiffs considered that only so much paid on account, and contended that the word "cash" in the contract meant specie (gold or silver). The question in relation to this point was, from the evidence, left to the jury to decide, which they did, by bringing in a verdict for plaintiffs for $18,066, that being the difference in value between gold and greenbacks at the time of the delivery of the cargo, with interest added to date.

We may remark, in passing, that the ruling of Judge Smalley has caused no little surprise, and the general sentiment of the mercantile community is, that the decision cannot be sustained on appeal, since, by a law of Congress, greenbacks are made a legal tender, and hence, it is claimed, they should be held in law and equity to answer the purpose of coin in the payment of all obligations on contracts made after the passage of the law in question.—*Shipping and Commercial List.*

BALLOONS filled with hydrogen were first introduced in the year 1762, by a professor of physics in Paris. During the same year the first aerial voyage was made in a balloon filled with hot air.

A BOOT-BLACKING machine has made its appearance on the streets of Buffalo.

© 1866 SCIENTIFIC AMERICAN, INC.

Improved Horse Collar.

The merits of the horse collar herewith illustrated are such as will recommend it to all who have any sympathy for the welfare of the horse. In construction it consists of a neat iron frame attached to small iron plates covered with cloth or leather pads, and is formed so as to throw the draft upon the horse's breast between the neck and the points of the shoulder. The tug frame, as seen in the cut, projects sufficiently to keep the traces from rubbing the shoulder blades, and thus leaves them free from

DURFEE'S HORSE COLLAR.

any pressure. The inventor claims that, by this plan, a horse can draw more, do his work easier, and travel freer than in any other collar, and without liability of being galled or fretted. The collar is ornamental, light, strong, and durable, and is so made that the size can be easily altered so as to fit any horse.

Patented October 9, 1866, by C. R. Durfee. For rights to vend and manufacture, and for other particulars, address D. A. Calvert, 119 Nassau street, New York, or Durfee & Baldridge, Rochester, N. Y.

THE NOVEMBER METEORS.

The flight of a meteor, or, in popular language, the falling or shooting star, although a phenomenon with which we have become familiar, yet is one that intuitively causes the mind of the observer to inquire, whence comes it, or whither does it go? The appearance of these meteors in great numbers at certain seasons of the year has long been recognized, and the displays of unusual splendor at regular intervals have caused the attention of astronomers to be turned to the investigation of this subject with the view of ascertaining the length of this cycle, and to predict the return, with some degree of certainty.

Accepting the theory that both the periodic and sporadic meteors, as they are called, form parts of a ring of unequal density throughout its circuit, then it is evident that according to the place in which the earth pierces this group, will the number of stars seen be greater or less, and only when those parts of the ring are at the nodes with us, near or at the end of the cycle shall we witness these grand phenomena, that have periodically affrighted the earth's inhabitants for past centuries.

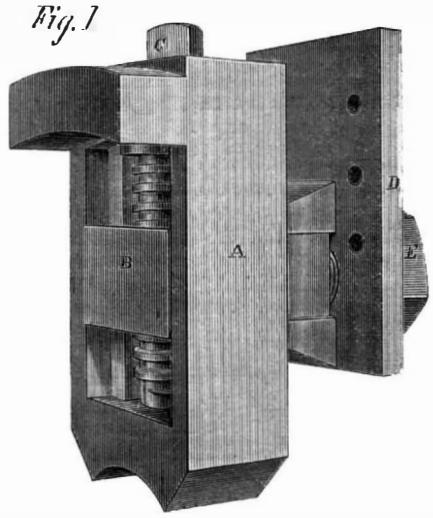
The recorded returns of these meteoric showers have been compiled at various times, and from a comparison of the epochs, the separation of about thirty-three years has been found to constitute the length of the cycle. The Journal of Science some time since furnished a catalogue newly compiled by Prof. Newton, of Yale College, from which we make some extracts.

The first shower here recorded was in the year A. D. 902, and shows the tendency to associate these marvelous exhibitions with some local or national calamity. "In this month (October) died Ibrahim bin Armad, and that night there were seen, as it were, lances, an infinite number of stars which scattered themselves like rain right and left, and that year was called the year of stars." The historical evidence of the date of this remarkable shower is quite conflicting, but from this confusion the selection of the 13th of this month seems justifiable. The authority for the next two accounts in the catalogue is Chinese; in the original, the announcement is a model of brevity, for having given the date of the latter of these showers, Oct. 14th, 934, it simply says "at this time there were seen many shooting stars all at once." Displays of this kind are also recorded as occurring in October 1002, 1101, 1202, 1366, 1533, and 1602, and on Nov. 9th, 1698. Humboldt witnessed a similar phenomenon on the morning of Nov. 13th, 1799, in Cumana, South America. The year 1833 is memorable for the most remarkable shower on record, and for the vast extent of country over which it was visible. This being the last date, the cycle of thirty-three years will be completed during this year; hence the generally prevailing belief that the month of November is to witness another of these celestial exhibitions. Possible perturbations, and irregularities in structure of the group, may overthrow these calculations, and cause unexpected variations in time or place. Time will tell.

STAUB'S IMPROVED CHUCK JAW.

The trouble and labor of removing the ordinary face plate from the lathe, and screwing on the heavy scroll or universal chuck, makes the improvement here illustrated one especially valuable to machinists. By the use of these jaws the ordinary face plate, or the disk of the universal chuck, can be used either as face plate or chuck. The only alteration necessary is in those plates which have but one radial slot, in which case others should be made.

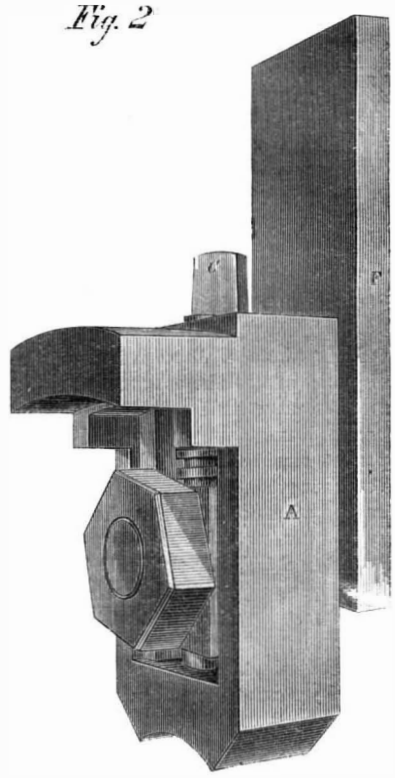
Fig. 1



The jaw, A, is of cast iron, having a rabbeted slot in which slides the nut, B, through which the screw, C, works, thus raising or lowering the jaw from or toward the center. The shank of the nut, B, passes through the face plate and the back plate, D, and has a nut, E, on the end. Fig. 1 shows the form of jaw adapted for the face plate, having its radial slots cut entirely through. Holes are made in the back plate, which correspond to similar holes in the face plate, to receive pins, which retain the jaw in position, when the nut, E, is not set up. When screwed up, the nut, E, in combination with the jaw and back plate, is a vise, firmly holding the face plate and securing the jaw in position.

Fig. 2 is an adaptation of the jaw to those disks which have enlarged radial slots, or rather T-shaped recesses. In this case the nut is on the front of the jaw, and the back plate, F, slides in the rabbet. This plate also has holes for pins which pass through the back of the disk or face plate.

Fig. 2



By the use of these adjustable and removable jaws the machinist can dispense with the cumbrous independent jaw chuck, which would be especially desirable for the proprietors of small shops. The over hang of the jaws enables the workman to chuck either from the inside or outside, and the graduating screw, with the adjustable jaws, will render the chucking of irregular shapes easy and convenient. The device is a good one.

Patented through the Scientific American Patent Agency, Oct. 31, 1865, by Mathias Staub, of Philadelphia. For rights and information address Shaeffer & Koradi, corner Vine and Fourth streets, Philadelphia, Pa.

Fraser Guns.

The further test of one of the 64-pounder rifle guns constructing on Mr. Fraser's plan, for testing the exterior or jacket of the gun, has been completed in the most satisfactory manner. The outer jacket of wrought-iron had to sustain the brunt of the explosion, as the inner tube had been worn and split in three places by the severe test to which it had been formerly applied. Notwithstanding, however, the inner tube and muzzle of the gun were simply blown forward a few yards, the trunnions and outer jacket remaining in the carriage uninjured and fit for further use. As the gun was doomed to destruction, to prove its extreme power of endurance, the experiment was carried out with the usual caution in the bursting cell; but the nature of the rupture of the gun was such that, had no caution been observed, and the gunners had remained at the gun, no injury could have been sustained. The manner in which the gun gradually gave way is held to be a satisfactory proof of its superiority. The repair of the gun in an early stage of the experiment, which was easily practicable by the insertion of a new tube, was not adopted, as the object was to test the endurance and safety of the gun with a split tube. The gun has fired upwards of 2,200 rounds.—*Engineering.*

On Friday afternoon the engine of the train coming from Ventor, and due at Ryde at 5.40, ran off the rails about one hundred yards from the station, owing to a piece of chalk getting into the points, thereby preventing the rails closing properly. No very great damage was done.—*Engineer.*

© 1866 SCIENTIFIC AMERICAN, INC.

Correspondence

Porcelain and Opalescent Glass.

MESSRS. EDITORS:—The following communication serves as an answer to your wish expressed, page 233, that some of your readers would send you for publication the formula for the manufacture of porcelain glass. In the glass houses this is usually called "bone glass," the chief ingredient being burnt bones. As the cheapest and best for its production, jawbones are preferred, probably on account of the enamel of the teeth they contain. After burning, they are ground and mixed carefully with the powdered mass of which the common glass is usually made, namely, old broken glass, white sand, oxide of lead, lime, and potash.

There is no decided formula for the proportion, but the quantity of bone ash is varied in accordance with the degree of opaqueness it is intended to give. Two per cent is the least, 30 the maximum; this makes the glass perfectly opaque. As bone ash consists of phosphate of lime, it is clear that the phosphoric acid causes the opaqueness, as the lime by itself makes with silica a transparent glass; remelting makes it more opaque, probably by causing a more perfect combination of the phosphoric acid with the other ingredients.

Quite recently, burned guano has been introduced in Germany for the manufacture of porcelain glass; as guano consists chiefly of very finely divided phosphate of lime, it is very successful and even cheaper than bone glass. The prescription for a superior quality of guano glass is: pure sand, 120 parts; potash, 70; calcined soda, 10; common salt, 3; saltpeter, 6; red lead, 20; guano ashes, 60; manganese, ½, and borax, 3.

Oxide, too, may also be used; but as it requires more to produce the same effect, and, besides, is much dearer, its use has been almost abandoned. Arsenic, however, is, in many glass works, used in small quantities as an addition to the bone ash.

This kind of glass shows always more or less opalescence, that is, a play of colors when looked through in different directions, and inclinations of light. In the above-described glass it is often somewhat reddish, but this may be modified, increased, or changed by the addition of different metallic oxides, as yellow by oxide of uranium, and a most brilliant green by adding to this forge scales or oxide of nickel.

A new field of industry may be opened by combining the substances used for coloring glass with this porcelain glass, and the application of this beautiful compound for the manufacture of objects of taste and usefulness, namely, brownish yellow, by charcoal or soot; green, by protoxide of iron; bright yellow, by antimoniate of potash; red, with sesqui-oxide of iron. The Bohemian orange glass is produced by the mixture of the two last. Emerald green, by oxide of copper; bright red, by very small quantities of sub-oxide of copper; ruby, scarlet, carmine, and rose, by gold, used in the form of purple of cassius; amethyst color, by oxide of manganese; grass green, by sesqui-oxide of chromium; blue, by cobalt, etc., etc.

In closing, I will remark that the above is of special importance to the analytical chemist, as the art of testing mineral substances by the blow-pipe is, to a considerable extent, founded on this peculiarity of many metals of giving to glass different particular colors; this being applied on a very minute scale, namely, a glass bead not much larger than a pin head suspended at the end of platinum wire, and exposed to the inner or outer flame before the blowpipe.

P. H. VANDER WEYDE, M. D.

Philadelphia, Oct. 23, 1866.

A Singular Quality in Steel.

MESSRS. EDITORS.—In Vol. XV., No. 19, of the SCIENTIFIC AMERICAN, I notice an article by your correspondent, "E. P. W," in which he speaks of a singular quality of steel. During the war I was engaged in the manufacture of cavalry sabres for Government. In the severe tests to which every blade was subjected, some of them would be found too soft; these I would heat to a blue, and let them cool off, and they would nearly all regain their elasticity, the same as they were before they were polished, but in polishing about one-fourth of them would again lose their elasticity. By experimenting I found that when they first came from the fire after being blued, or "stiffened" as we called it, to dip them into a solution of sulphuric acid and water, about six parts of water and one of acid, would remove the blueing; and then as soon as they came out of the acid dip them into strong lime water, which would destroy the acid, and prevent the blades from rusting, when, if wiped off, they would retain their elasticity. This seems to show that it was not removing the blueing that caused them to lose their elasticity, but what was polished off of the outer surface of the steel. Circular saws or any other tools that are too soft may be stiffened in the same manner. I tried to stiffen blades in this way before they had been hardened and tempered, but the process had no effect whatever. Having never tested the blueing process on the cutting quality of steel, I am unable to state the facts, but presume it will improve a tool that is too soft in the same proportion that it will improve its elasticity.

J. E. E.

Trenton, N. J., November, 1866.

PATENT OFFICE DECISION----CARTRIDGES.

BEFORE THE EXAMINERS-IN-CHIEF ON APPEAL.

Hon. Elisha Foote for the Board.

Alleged Improvement in Cartridges.

The applicant provides a metallic stem or needle, that, passing through the charge, fires, when struck by the hammer, a percussion cap at the base of the ball. The cartridge is filled, around the stem, with two grades of powder—coarse next to the ball, and fine in the rear.

In the use of the stem to fire the charge in front, the applicant has been anticipated. It was patented to C. E. Snyder, in Oct., 1864, and in consequence, he has limited his claim to its combination with the use of powder of different degrees of fineness; or, as he terms it, his accelerating charge.

The applicant's theory is, that the coarse powder around the fulminate will be first ignited, and burn slowly, while the ball is being started and put in motion; then the fine powder will be reached, and a more rapid combustion and powerful impulse ensue.

The applicant has also two other arrangements and claims for them. In these, the grains of powder are uniform. In one, the cartridge is fired at both ends simultaneously, and it is supposed that by this double combustion, a great amount of powder will be burned and powerful impulse given. In the other, the firing is at the center, and it is imagined that the combustion proceeding thence outward, and constantly enlarging the sphere of its action, will keep up and increase the pressure of gas until the ball leaves the gun.

We apprehend that the applicant is entirely mistaken in his theory of the combustion of powder. The heated gases of the fulminate, almost instantly, permeate the whole mass, entering the interstices between the grains and firing, practically, every grain at the same moment. These, then, burn from the surface only, and the times of their combustion depend upon their sizes.

The idea of placing coarse powder next to the ball, and fine behind it, and firing in front, is not a new one, but has often been tried. Charges have also been fired at different places at the same time, and vent holes have been placed in front, at the rear, and at different places along the sides; but all these variations have failed to produce any practical effect.

The applicant's devices lack, therefore, one of the essential elements of a patentable invention, to wit: that of producing a new and useful result. It is not every new combination, nor every new device that is patentable. Both must be the result of invention rather than of mere mechanical skill, and both must produce new results.

We do not propose to set up our views in opposition to any practical effect that any one may obtain. But when a patent is desired, for what appears to be opposed to mechanical principles, or for results or processes that are opposed to former experience, some evidence should be furnished that the world has been mistaken before a patent is issued.

The Statute under which we act authorizes patents for inventions only when "deemed to be sufficiently useful and important." It cannot be expected that, under this authority, the office should give its sanction to anything that is absurd, or to fancied results that are opposed to general experience.

The decision of the Examiner must be affirmed.

NOTE.—A Patent was subsequently issued for this cartridge by the Commissioner. We are not informed upon what grounds.

Inventions Patented in England by Americans.

Condensed from the "Journal of the Commissioners of Patents."]

PROVISIONAL PROTECTION FOR SIX MONTHS.

2,299.—HAT OR COVERING FOR THE HEAD, PARTS OF WHICH IMPROVEMENTS ARE APPLICABLE TO PARASOL OR FAN.—William H. White, Kent Island, Md. Sept. 7, 1866.

2,421.—METHOD OF LUBRICATING VERTICAL SPINDLE OR SHAFT, AND APPARATUS FOR EFFECTING THE SAME.—Thomas Marsh, Central Falls, R. I. Sept. 21, 1866.

2,425.—NEW MACHINE FOR SETTING AND DISTRIBUTING TYPE.—John A. Gray and Samuel W. Green, New York City. Sept. 21, 1866.

2,427.—PICKER MOTION FOR LOOM.—Hosea Elliott, Globe Village, Mass. Sept. 21, 1866.

2,451.—MACHINERY OR APPARATUS FOR FILTERING LIQUIDS.—Robert Stewart, Brooklyn, N. Y. Sept. 24, 1866.

2,471.—LAMP FOR BURNING VOLATILE OILS, SPIRITS, AND OTHER FLUIDS.—Henry A. Gadsden, New York City, temporarily residing at Havre, France. Sept. 25, 1866.

2,491.—COLLECTING AND DELIVERING LETTERS AND PARCELS, AND APPARATUS FOR THE SAME.—Alfred E. Beach, Stratford, Conn. Sept. 26, 1866.

2,548.—MACHINERY FOR CUTTING FILES AND RASPS.—Alfred Weed, Boston, Mass. Oct. 3, 1866.

2,549.—FILE-CUTTING MACHINERY.—Alfred Weed, Boston, Mass. Oct. 3, 1866.

2,585.—MANUFACTURE OF LEATHER BINDING.—Matthew H. Merriam and Eugene L. Norton, Charlestown, Mass. Oct. 8, 1866.

EXTENSION NOTICES.

William Stratton and Matthias Stratton, of Philadelphia, Pa. having petitioned for the extension of a patent granted to them the 1st day of February, 1853, for an improvement in portable gas apparatus, it is ordered that the said petition be heard on Monday the 14th day of January next.

Notes and Queries

F. M. E., of Mo.—In our issue of the 3d inst., our reply to your queries was somewhat incorrect, as we have since ascertained from the manufacturers of rubber belts These belts can be kept from slipping by lightly moistening the side next the pulley with boiled linseed oil. Animal oil will not do. Belts of good vulcanized rubber will stand a high degree of heat without injury.

A. S., of Del.—Phosphorus alone cannot be reduced to the form of a paste, but it may be mixed, by melting and stirring, with many substances of a pasty consistence. It is melted with grease for a rat poison, and mixed with gum water for friction matches.

C. P. L., of Mo., has a cellar 300 feet from a river. During high water in the river, the water percolates through the soil and floods the cellar. He desires to know how to make a good bottom to keep out the water. If bricks are cheap enough in his neighborhood, we advise him to lay down, in cement, a brick flooring. The pressure of water on the bottom might be as great as in a cellar on the same level at the bank of the river.

P. L., of Iowa.—The centrifugal force due to the revolution of the earth to some extent counteracts gravity, and consequently at a given distance from the center of the earth, any body will weigh less at the equator than any where else on the globe; the pressure of the air is less at the equator than at your place.

C. E. B., of Mass.—We know of no work which treats especially of electro-magnetic engines. The details of most of the engines already built are to be found in former volumes of the SCIENTIFIC AMERICAN. The scientific theory of the subject can be found in many of the text books on chemistry and natural philosophy. The most extensive treatise on electricity is by De la Rive. . . . Shellac dissolved in alcohol is the best insulating varnish. . . The U magnet which gives the greatest power for a given weight is thicker at the poles than at the neutral part. . . The wire of the electro-magnet may be effectually insulated by winding so that the spires do not touch each other and separating the courses by paper.

J. G. B., of N. J.—For grinding and polishing articles of hardened steel, wheels of corundum are used. They can be purchased at any first class machinists' findings establishment. A cylindrical plug for a templet is more readily reduced to size, however hard, by this means than any other we know. It leaves a very good surface, needing only polishing with bluestone, rottenstone, crocus, and rouge.

E. F. C. D., of Md.—A composition of 4 parts copper, 1 of tin and ¼ part zinc will make a metal suitable for small working models, having a good color and being easily wrought. Doubling the proportion of zinc will increase its hardness. The best material for a mold is fine molding sand that has been used. It should be free from clay, should take a fine impression of the skin when squeezed in the hand, and be capable of being cut into slices by a sharp knife without crumbling.

W. S. P., of N. Y.—Plaster of Paris is usually cast in molds of the same substance. The inside of the mold should be varnished with shellac.

G. F., of Pa.—Cast steel is steel that has been melted and run into molds. Other kinds of steel can be produced by cementation, puddling, hammering, and rolling. Cast steel is just what its name implies.

H. D., of Mass.—Manuscript for the printer should be written on one side of a sheet only. It is more convenient for "setting up" if not written across both pages of a sheet of note or letter paper. Use 1st and 3d pages for your writing.

NEW INVENTIONS.

The following are some of the most prominent of the patents issued this week, with the names of the patentees:—

SCREW FOR CHAIRS, ETC.—LOUIS POSTAWKA, Boston, Mass.—This invention relates to an improvement in the construction of a screw for elevating and depressing a piano chair without turning the seat or stand around, which may be applied also to writing desks and similar articles.

WATER-PROOF MAIL BAG.—JAMES M. JARRETT, Brooklyn, N. Y.—This invention has for its object to furnish an improved mail and express bag so constructed and arranged that it will be water-proof, and be sufficiently buoyant to float in water even when filled with mail or express matter.

BARN-DOOR FASTENING.—DAVID N. MINOR, Bridgewater, Mich.—This invention has for its object to furnish a convenient, durable, and secure fastening for barn and other similar doors.

DOUBLE-HEADED WRENCH.—JOHN J. LOVE, New York City.—This invention has for its object to furnish an improved wrench, simple in construction, easy of adjustment, and strong.

GATE HINGE.—BURTON GREENSIDE, Fort Dodge, Iowa.—This invention has for its object to furnish an improved hinge for hanging gates and doors.

HORSE CULTIVATOR AND HOE.—AMOS W. ROSS, Northfield Mass.—This invention consists in placing the cultivator upon wheels which may be adjusted, so that the cultivator may be carried with its teeth and hoes raised from the ground, or so lowered that they may enter it to any desired depth.

SAWING MACHINE.—CHARLES W. SAPPENFIELD, Crawfordsville, Ind.—This invention has for its object to furnish an improved sawing machine by means of which cord wood or other wood or timber may be sawed rapidly.

© 1866 SCIENTIFIC AMERICAN, INC.

SHEEP RACK.—HENRY H. LADD, Worcester, Vt.—This invention consists in so constructing and pivoting the grain or feed troughs of a sheep rack to the sliding frame in which they are set, that the said frames and troughs may be drawn out laterally and the troughs emptied or cleaned by turning them over upon their pivoting points.

STANCHION FOR TYING CATTLE.—J. B. CROWELL, Newport, N. H.—This invention consists in so constructing a stanchion as that all the cattle may be released at the same time, or singly, as desired.

MACHINE FOR LEATHERING TACKS.—WM. H. FIELD, Taunton, Mass.—The nature of this invention consists in so constructing a machine that small tack nails may be leathered in a very perfect and rapid manner

FENCE.—JONATHAN BUNDY, West Liberty, Iowa.—This invention consists in the combination and arrangement of the blocks or cross pieces, wires, and anchoring stones, with each other and with the fence posts, for the purpose of sustaining said posts in a vertical position upon their supporting stones, and enabling the fence to resist a side pressure.

RATCHET WRENCH.—G. W. TRAPHAGEN, Glen's Falls, N. Y.—This invention relates to an extremely useful ratchet wrench, intended more especially for the turning on or off of nuts from bolts.

COTTON CULTIVATOR.—JOEL A. HALL, Columbus, Ohio.—The nature of this invention consists in the peculiar and novel construction of a machine by which cotton may be cultivated in the bottom of the furrows, between the rows, and on the ridges where the cotton stands.

BEEHIVE.—T. F. BINGHAM, Gowanda. N. Y.—This invention consists in a novel construction of the hive, and comb frames thhreof, as well as in a general arrangement of the parts whereby superior advantages are obtained in bee culture, such, for instance, as the ready removal of the comb frames individually, the augmenting or decreasing of the number of said frames as well as the dividing of the same or the separating of them into different compartments, as may be required, so that each comb frame may be inspected separately, and manipulated as required, the hive divided to promote swarming, etc., etc. The bee entrances are also shielded or guarded and rendered capable of being contracted or enlarged to suit circumstances, the building of straight combs insured, and a uniform temperature within the hive promoted.

WATER ELEVATOR.—W. E. BABCOCK, East Pembroke, N. Y.—This invention relates to a new and improved device for drawing or elevating water for domestic purposes, and of that class in which a windlass and bucket are employed for the purpose. The object of the invention is to obtain a device for the purpose specified, which may be operated with the greatest facility, be capable of having the bucket rope lengthened or shortened without any difficulty whatever, and also to obtain a bucket which will be cheap and durable.

MACHINE FOR MAKING HORSE-SHOE NAILS.—H. E. WOODFORD and C. W. WOODFORD, Keeseville, N. Y.—This invention relates to a new and improved machine for making horse-shoe nails, and of that class in which the nails are formed by forging instead of being compressed to the proper shape by means of dies. The object of the invention is to produce a nail which will be equally as good as those made by hand, and which will perform the work expeditiously.

MACHINE FOR MAKING SPIKES AND RIVETS.—J. O. REILLEY, Baltimore, Md.—In this machine the levers which operate the head-bending and the pointing die are thrown out of connection with the operating cams by bending their pivoted arms out of range, so that the machine may be adjusted for making hooked-headed or plain spikes or rivets. The gage moves in the same plane as the moving die and maintains its position till the header is about to advance. The cutter is advanced after the iron is clamped by the dies, so that it is not thrown out of position by the action of cutting. Patented Oct. 16, 1866.

WIND SAIL.—JOHN C. RAYMOND, Greenpoint, N. Y.—This invention relates to a wind sail which is provided with four wings so that the same is capable of catching the wind from whatever quarter the same may blow, and the time and labor generally required for setting the wind sail is saved; said wind sail is provided with a top which extends beyond the barrel, so that the sail need not be taken down when it rains.

FURNITURE CASTER.—JAMES T. BARNES, Hudson City, N. J.—This invention principally consists in the employment of two wheels which are mounted on an axle secured to the end of the shank so that when the caster is applied to the leg of a piece of furniture the wheels will be directly under the said leg.

INK-CUP.—PHILIP R. HOLBROOK, Malden, Mass.—This invention consists in constructing an inkstand by the employment of a rubber cup placed in a suitable cavity in a stand or block of any suitable material, whereby a very convenient inkstand or cup is produced and one which can be very readily cleansed.

WASHTUB.—REUBEN HOOVER, Boonsborough, Iowa.—The nature of this invention consists in attaching to a common washtub a device by which clothes of any description may be neatly and successfully washed.

SULKY PLOW.—GEORGE KNIGHT, Boone, Iowa.—This invention relates to a new and improved plow of that class which are connected with a mounted frame containing a driver's seat, and are commonly termed sulky plows, and it consists in a peculiar construction and arrangement of parts, whereby the driver has full control over the plow, and a very simple, efficient, and economical device for the purpose specified obtained.

CLOTHES WASHING MACHINE.—DANIEL KUNKEL, Oregon, Mo.—This invention relates to a new and improved clothes-washing machine of that class in which a rotary motion is imparted to the clothes, in order to subject them to the necessary friction and rubbing.

MEASURE.—LEWIS COATES, Colamer, Pa.—This invention relates to a measure with a shifting bottom, which is provided with suitable catches or fastenings at its under side, in such a manner that by raising or lowering said bottom the measure can be adjusted for different quantities, such as a peck, a bushel, a coomb, or any other desirable quantity, and that one and the same measure can be used for various quantities. The bottom is adjusted according to the desired quantity to be measured by notched staves, which receive the spring catches or fastenings, and retain said bottom in the desired position.

DOUBLETREE AND WHIFFLETREE.—LEWIS BARNES, Waterford Mich.—This invention relates to a new and improved manner of applying the irons to the doubletree and whiffletree, whereby a very strong and durable connection of the hooks and eyes to the doubletree and whiffletrees is obtained, and the iron plates secured to said parts in a very permanent manner, and malleable cast-iron plates rendered capable of being used.

PITMAN FOR DRIVING THE SICKLES OF GRAIN AND GRASS HARVESTERS.—J. W. DOTY, Lockport, N. Y.—This invention relates to a new and useful improvement in pitmen for driving the sickles of grain and grass harvesters, and has for its object the obviating of wear and tear, and jars and concussions produced by unnecessary play at the points of connection, as well as the obviating of undue friction and breakage caused by the pitmen getting out of line with the wrist pin and cutter bar.

CLOTHES WRINGING MACHINE.—A. C. GALLAHUE, Dover Plains, N. Y.—This invention relates to a new and improved clothes-wringing machine of that class in which pressure rollers are employed. The invention consists in a novel construction and arrangement of the frame of the machine, and a novel application of springs thereto, whereby the pressure of the rollers upon the clothes may be graduated as desired, the movable and adjustable roller adapted to suit clothes of various thicknesses, and the adjustable roller allowed to yield or give readily to the varying thickness of the layer of clothes passing between them, the above results being obtained by a very simple mode of construction, which admits of the machines being constructed at a very moderate cost.

MACHINE FOR PUNCHING THE UPPERS OF BOOTS AND SHOES.—JOHN H. KEATING, Marblehead, Mass.—By this machine any number of holes can be punched in the upper, at one and the same time; the several punches being arranged within the machine so as to be susceptible of adjustment with regard to each other, to correspond in direction with the edge of the upper that is to be punched.

LETTER BOX OR PIGEON HOLE.—THOMAS K. STERRETT and W. R. FARRELL, Philadelphia, Pa.—This invention has for its principal object to hold papers, letters, etc., when folded and placed within the box or pigeon hole, in such a manner as to obviate all possibility of their becoming unfolded and disturbed.

MACHINE FOR STRETCHING LEATHER.—W. STREVELL, Jersey City, N. J.—This invention consists in constructing the machine so that an easy strain can be produced upon the leather while the power is being applied to stretch it; and so that the slack in the leather, as it dries, will be taken up.

CLOTHES SPRINKLER.—FREDERICK ASHLEY, New York City.—This implement is exceedingly simple and cheap in its construction, and for use in kitchens in the sprinkling of clothes previous to being ironed will be found to be most convenient, serviceable and desirable, as with it the clothes can be sprinkled so uniformly and evenly that they can be immediately ironed, if so desired.

SLEIGH OR SLED BRAKE.—J. R. MCALISTER, Richville, N. Y.—This invention consists in so hanging brake blocks or shoes to the runner frames of a sleigh, that while they will not act upon the ground as the sleigh is backed, they can be brought to bear against the ground if the sleigh is descending a hill.

HAY RAKE AND LOADER.—THOMPSON FRAME, Barnesville, Ohio—This invention relates to a labor-saving implement for raking and loading hay in the field, and is to be attached to a wagon or cart into which the hay is conveyed through a chute until it is filled, when it is detached, and remains waiting in the field for the return of the wagon after being emptied.

COTTON-SEED PLANTER.—W. A. HORREELL, Washington, Ind.—This invention relates to an improved machine for planting cotton seed, and consists of a truck frame mounted on wheels to be drawn by a team, to which is attached a plow in front to open a furrow, and a shovel-shaped coverer in the rear to cover the seed dropped in the furrow by means of an endless belt which passes through a seed hopper on the top of the truck.

CHALK-LINE WINDER.—JONATHAN H. ROSE, Mount Sterling, Ill.—This invention relates to a reel for winding a carpenter's chalk-line, after it has been used, by means of a self-acting coil spring, which, with the reel, is inelosed in a small hand box, thereby furnishing a convenient and useful instrument for a workman, saving much time in winding the chalk line and keeping it clean and in good order, always ready for use.

BURGLAR ALARM.—HENRY YERTY, Sidney, Ohio.—The present improvement consists in mounting one or more barrels upon a vertical pivot, so that when the cord or cords which may be attached to the barrel and some fixed point, are pressed against by an approaching object, the barrels will be swung around and adjusted in line with the object, and then discharged with accuracy toward the point where the cord is acted upon. The cord is extended across a field or orchard, or attached to a window-shutter, door, or other point, where it is desirable to have a means of protection against robbery or depredation.

FLOATING SAFE.—THOMAS T. FURLONG and DEWITT C. FREEMAN, St. Louis, Mo.—The design of this invention is to supply a floating safe for the security and preservation of treasure and valuables at sea or on inland waters in case of a shipwreck or other destruction of a vessel on which they may be shipped; and it consists in providing therefor a hollow water and air-tight buoy made of iron or other suitable metal, or of wood and metal combined, formed of an inner and an outer shell or casing with an air space between them, proportioned to the size and weight of the safe and its contents, to give the required buoyancy when thrown into the water.

CHEMICAL COMPOUND FOR MEDICATED INHALATIONS.—ABRAM H. CARPENTER, New York City.—This invention or discovery consists in forming a compound of various salts and chemical ingredients, which are converted into a gas under such conditions as to become highly charged with oxygen and permanently magnetized, for the treatment of diseases by inhalation of the gas.

AUTOMATIC CHURN.—N. E. WILSON, Pittsburgh, Pa.—The fatigue incidental to the use of the old dasher churn has been dispensed with, while this popular form has been retained, through this invention, by employing clockwork as a motor, in a very ingenious manner. The churn is suspended on pivots, and has an oscillatory motion. The plunger is driven by the power derived from two large coiled springs, the motion being conveyed by two worms working in gears; these together with a fly-wheel regulator, constitute the whole machinery. A sufficient number of motions are given at a single winding to complete a churning when the cream is in proper condition. Patented May 8, 1866. J. J. Burns, of Fairmont, W. Va., has taken the agency of this ingenious churn, and may be addressed for two weeks at Lovejoy's Hotel, New York City.

LOCOMOTIVE FIRE GRATE.—R. EATON, Lee, England.—This invention relates to a grate which is composed of a series of square terraces of gradually decreasing size which rise above each other, and are inclined toward the center in such a manner that a uniform supply of air to the fuel is obtained, and a more perfect combustion is effected than with a grate of the ordinary construction; and, furthermore, the waste of unconsumed fue dropping through the grate bars is avoided.

PROCESS FOR MAKING EXTRACTS.—JULIUS ROBERTS, Leelowitz, Austria.—This invention relates to a new process for extracting all the juice from plants, particularly from sugar cane, beet roots, maize, etc., by means of what the inventor calls "diffusion."

CORK-PULLER.—CHARLES LOEFFLER, Hoboken, N. J.—This invention relates to a cork puller which consists of a thin shank provided at one end with a suitable handle, and at the opposite end with a curved, sharp-edged tooth, in such a manner that by passing said tooth down between the cork and the neck of the bottle and turning it so that the same bears on the under surface of the cork, said cork can be withdrawn without being injured; and, furthermore, by the very act of passing the tooth down between the neck of the bottle and the cork, said cork is loosened and the operation of withdrawing the same is facilitated.

PUDDLING FURNACE.—DANIEL HALL and JOSEPH HALL, Wheeling, W. Va.—This invention relates to certain improvements upon puddling and boiling furnaces, which consist in a novel mode of constructing the stack of the furnaces, of forming and supporting the neck or exit flue between the puddling chamber and the stack, of building the fire-bridge, and several other novel arrangements connected with the puddling and fire chambers, all of which jointly and severally conduce to the ecomical production of iron by reducing the cost of construction of furnaces, and of repairs in keeping them in working order, while at the same time the operation of boiling or puddling is facilitated.

CARPET FASTENER.—WILLIS WEAVER, Salem, Ohio.—The object of this improvement is to provide a simple and cheap device for fastening down carpets and other coverings. This fastener is composed of wire so as to have an eye in front and one or more sharp hooks behind the eye. The hooks enter the carpet, while he eye is intended to catch over a pin in the floor, and hold the carpet.

MODE OF CURING HIDES, ETC., AND FOR THE PRODUCTION OF LEATHER.—HENRY NAPIER, Elizabeth, N. J.—This invention consists in immersing the hide, skin, or fur in a solution of carbolic acid, or of creosote, or of carbolic acid or creosote rendered alkaline in a slight degree, or in carbolic acid or creosote combined with glycerin, or in carbolic acid or creosote with the addition of an astringent metallic salt, such as the protochloride or the perchloride of iron.

PULLEY.—ROBERT W. PARKER, Roxbury, Mass.—This invention relates to the construction of pulleys for transmitting motion to machinery by means of belting applied to a segment only of the periphery of the driving pulley, the object of which improvement is to establish a compensating movement between the belt or band and the pullies when in motion, so that they shall be perfectly self-adjusting, and by the freedom with which they play within certain practical limits, shall be able to meet and neutralize the deranging effect occasioned by an inequality in the belting or banding employed, or a sudden and violent change in the speed of the machinery.

DETACHABLE HEEL FOR BOOTS AND SHOES.—OSCAR STODDART, Jackson, Mich.—This invention consists in constructing heels for boots and shoes of two parts, one part of which is attached permanently to the boot or shoe, and the other part made separately from the fixed part, and provided with catches or fastenings, so arranged that the separate part may be readily attached to or detached from the fixed part, and the detachable part reversed or changed from the shoe or boot of one foot to that of the other, as required, in order to insure the even wear of the heels.

LIQUID GLUE CEMENT.—WILLIAM C. WATSON, Paterson, N. J.—The object of this invention is to obtain a liquid glue or cement, which will not harden or become solid by time, nor become putrescent, but which may be kept in a liquid state, ready for direct application, for an indefinite period.

HANGING MILLSTONES.—LEWIS FAGIN, Cincinnati, Ohio.—This improvement consists in the mode of balancing the stone upon the cock-head, so that the point of contact between the cock-head and the cock-eye is midway of the vertical height of the bearing of the driver in the slot of the balance rim, the stone being thereby practically self-tramming. The piece which projects above the other irons is so shaped as to sustain the cock-eye in its proper position and relation to the driving lugs.

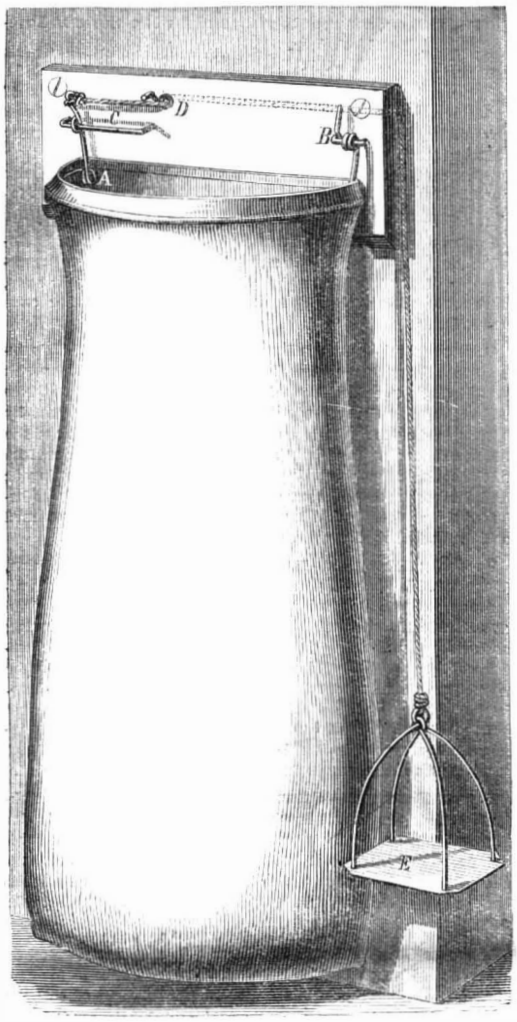
FIREMAN'S EXTENSION LADDER.—THOMAS WATSON and CHAS. PERRY, Brooklyn, N. Y.—This invention has for its object to furnish an improved fireman's extension ladder, so constructed and arranged that it may be quickly and easily extended to any desired hight, and may, while wholly or partly extended, be easily removed from one place to another.

FURNITURE KNOB.—L. B. MYERS, Elmore, Ohio.—Furniture knobs as commonly fastened to drawers and doors, by means of a single screw of wood or metal, or with glue, are very apt to wear loose by use and come off, frequently occasioning much trouble and inconvenience, besides disfiguring the furniture. The design of this invention is to meet this difficulty by providing such a fastening for the knobs that they will not work loose or come off from use, but remain firm on the furniture permanently.

© 1866 SCIENTIFIC AMERICAN, INC.

CORBIN'S PATENT BAG HOLDER.

This bag holder is one of the simplest conceivable appliances for stretching the mouth of bags and facilitating their filling with grain, plaster, or any other substance, we have ever seen. It is merely a semicircular rod of heavy wire, or small round iron, secured by the ends to staples, fastened into a board, which may be secured to the side of a



room or hung on nails to any upright—a wall, tree, etc. The corners of the wire are twisted, as at A, which gives a spring to the hoop, and while one end merely turns on the staple at B, the other has a sliding motion, also, on the long staple, C. To this end is attached a line which passes through the board at D, and along the back, as shown by the dotted lines, depending from the other end, and being furnished with a stirrup, E, for the foot.

The operation is simple. The stirrup being depressed by the foot, brings the ends of the hoop nearer together, when the bag can be slipped on. The foot being removed, the spring of the wire allows the hoop to expand, distending the mouth of the bag and holding it securely. By again depressing the stirrup the bag is released. The device is equally well adapted to loading from an inclined position, as at the end of a chute. Its advantages can be readily comprehended.

This improvement was patented through the Scientific American Patent Agency Sept. 4, 1866. All communications relating to rights to manufacture, sell, or for territory, should be addressed to the patentee, Dr. G. E. Corbin, St. John's, Mich.

NITRO-GLYCERIN AS A SUBSTITUTE FOR GUNPOWDER.

A correspondent in the London *Mining Journal* of Oct. 13th, gives an account of two accidents from the use of nitro-glycerin, which seem to show a demand for a more thorough knowledge of its attributes and of the proper mode of its management.

At Llanberis, Wales, in the quarries of the Glynrhonwy Slate Company, a series of holes had been drilled and charged with this compound, which were to be fired simultaneously by electricity. From some cause one of the charges was not ignited, and another hole was bored in close proximity. The workman had been employed at his task but a short time when the charge exploded, killing him on the spot. It is believed that the concussion produced by the blows was the cause of the explosion. No attempt was made to withdraw the unexploded charge, as the directions of the manufacturers of the nitro-glycerin characterized the attempt as highly dangerous.

The other case was that of some workmen who had tried to ignite some nitro-glycerin in a tin vessel, but failing, one of them thoughtlessly gave the vessel a kick, when, although the quantity was small, an explosion occurred shattering the vessel and the man's foot.

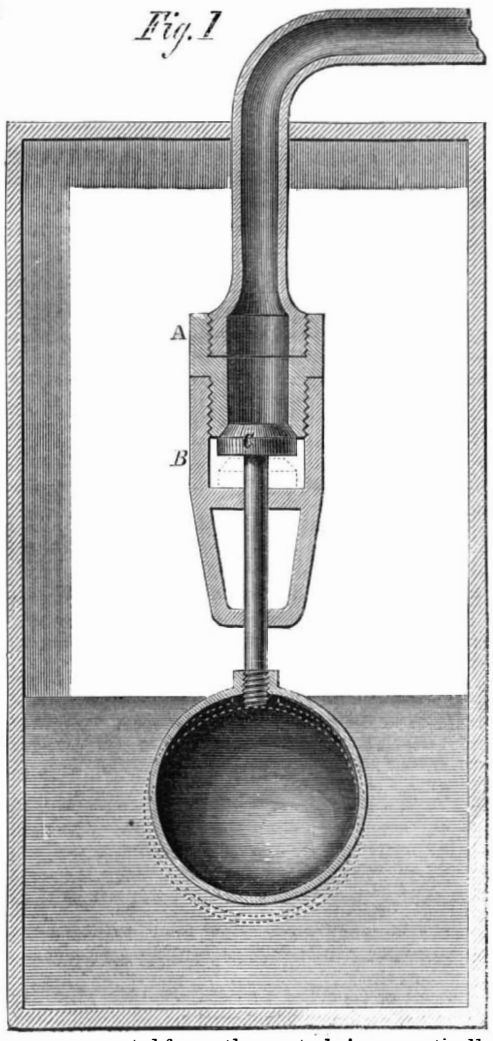
The correspondent correctly adds, that "accidents from powder or gun-cotton are generally occasioned by some want of ordinary care; but in that at Llanberis every precaution which would have insured perfect safety, had powder or gun-cotton been used, appears to have been taken, and the rules issued by the manufacturers of the nitro-glycerin were carefully observed. The inference, therefore, is that, though a charge of this powerful explosive may remove more rock at each blast than powder, or even gun-cotton, and may consequently effect a saving in the cost of blasting operations, its use will have to be prevented, or, at all events, much delayed, by the owners of quarries, who prefer the safety of their men to any pecuniary benefit obtainable from an economy in labor and material."

It is to be hoped that the experiments and investigations now being made in this country and Europe, by Col. Shaffner and others, will result in such reliable facts as shall enable this valuable and powerful agent to become the obedient servant of man and not his remorseless tyrant.

HEALD'S FLOAT VALVE.

It is not unfrequent that the common lever float and valve, for regulating the hight of water in a cistern, from one cause or another, refuses to work automatically. The cock, having a large amount of bearing surface, presents too much friction for the floating power of the lever ball. The valve here shown is an ordinary plug valve, which is the form presenting the least resistance, the friction,

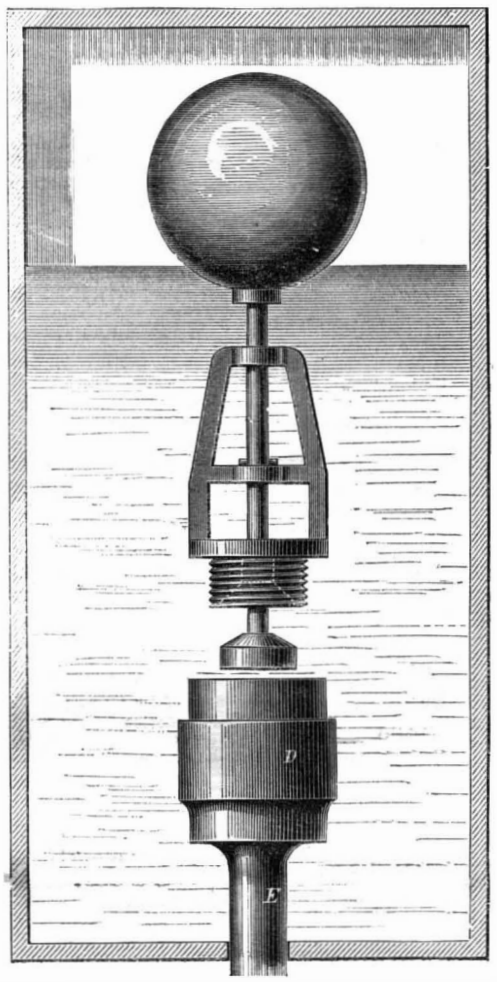
Fig. 1



soon as separated from the seat, being practically nothing. Its action is also direct, and the float can always exert power enough to close the pipe.

The valves are made in two forms—one intended for situations where the water is introduced above the seat, and the other for its introduction from below the seat. Fig. 1 represents the valve and float in section. The pipe is brought in at the top, or side of the tank, and screws into the top of the valve at A, which is a nipple screwing into the frame, B. The lower part of this nipple is a seat for the plug valve, C. The stem of the float is guided by the yoke of B, through which it slides freely.

Fig. 2



As the water falls, the float opens the valve and permits the further introduction of water through the pipe. So, as it rises, the valve is closed, the application of the power being direct.

Fig. 2 is a modification of the valve, designed for pipes which introduce the water through the bottom of the tank. In this case the seat of the valve is in the yoke portion of the frame. The nipple, D, is represented detached to show the valve. The lower portion of the nipple is furnished with an inside thread to receive the pipe, E. It will be seen that as the water falls the weight of the float, with its attachments, allows the valve to open, and as it rises the float closes the valve on its seat.

The inventor claims that this combined float and valve is superior to any other in use; that it is simple in construction, not liable to get out of order, can be easily applied to any cistern or tank, and operates with unfailing accuracy. It is also claimed that it can be usefully applied to regulating the flow of water into steam boilers. If at any time the valve should wear, it can be ground to place without detaching the parts.

It was patented Aug. 21, 1866, by Edwin Heald, Washington, D. C., to whom apply for rights for States and Territories, or for the whole patent, except the right to use in the District of Columbia.

RUSSIA.—A change has been made in the engineering of the Russian lines, and the French engineers have been relieved of their duties. Messrs. Winans have obtained a new contract for working the St. Petersburg and Moscow Railway upon terms still more favorable to them than their present contract. Four hundred locomotives are to be built at the railway works at Alexandrowski, near St. Petersburg, and within the last few days specifications have been received in London for locomotives for the Russian lines

© 1866 SCIENTIFIC AMERICAN, INC.

THE

Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY AT

NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN, S. H. WALES, A. E. BEACH.

☞ American and Mexican News Company, Mexico, are Agents for the SCIENTIFIC AMERICAN.

☞ Messrs. Trubner & Co., 60 Paternoster Row, London, are also Agents for the SCIENTIFIC AMERICAN.

☞ "The American News Company," Agents, 121 Nassau street, New York.

☞ Messrs. Sampson Low, Son & Co., Booksellers, 47 Ludgate Hill, London, England, are the Agents to receive European subscriptions or advertisements for the SCIENTIFIC AMERICAN. Orders sent on them will be promptly attended to.

VOL. XV., No. 20, [NEW SERIES.] *Twenty-first Year.*

NEW YORK, SATURDAY, NOV. 10, 1866.

Contents:

(Illustrated articles are marked with an asterisk.)

*Improved Rudder	315	New Inventions	321
Miscellaneous Summary	315	*Corbin's Patent Bag Holder	322
Charming by Serpents	316	Nitro-Glycerin as a Substitute for Gunpowder	322
Engraving for Calico Printing	317	Heald's Float Valve	322
Recipe for Curing Meat	317	Russia	322
*Improved Upright Saw-mill Set	318	Transportation of Fresh Meats to Market	323
Polytechnic Association of the American Institute	318	Ventilation — Its Necessity and Neglect	323
Important Decision — Does "Cash" Mean Gold?	318	The Arabic Numerals	323
*Improved Horse Collar	319	The "Scientific" in Texas	323
The November Meteors	319	Patent Claims, 324, 325, 326, 327	328
*Staub's Improved Chuck Jaw	319	Advertisements	328, 329
Fraser Guns	319	*Improved Metallic Cotton-Bale Tie	330
Porcelain and Opalescent Glass	320	Colors in Photography	330
A Singular Quality in Steel	320	Intensification of Negatives after Varnishing	330
Patent Office Decision	320	Spontaneous Explosion of Kerosene Oil	330
Inventions Patented in England by Americans	320	Important Patent Case Decided	330
Extension Notices	320	Gaining Power by a Lever	330
Notes and Queries	320	Prospectus	330

TRANSPORTATION OF FRESH MEATS TO MARKET.

In a recent number we alluded to the experiments made in England to introduce South American beef into her markets. The subject is one of so much importance that we are induced to refer to it again. Some years ago a company was organized in this city for the purpose of introducing refrigerating cars to be employed in transporting slaughtered beeves, mutton, and fowls, thus avoiding the necessity of sending live stock in bulk to this market, but this company seems not to have succeeded. Agassiz, we think, mentions the fact that animals driven from the interior to supply the South American cities, were so much injured by being shut up in pens and deprived of proper food, that the governments were obliged to impose stringent regulations, and immediately afterward an improvement was manifest in the quality of the beef. There are many very serious objections to the present system of transporting live animals to be slaughtered and sold in the markets of large cities. Their sudden change from pasturage to be huddled in cattle cars, or upon the decks of vessels, depriving them of wholesome food and water, produces a feverish state of the blood, and a consequent deterioration of flesh, so that by the time the animals reach the markets, the flesh is frequently unfit to eat. It has been remarked that the blood of animals thus transported, when fed to hogs, has made them sick, and from this conclusion it is reasonably urged that, inasmuch as the blood is the life of the animal, if it becomes impaired or diseased, the whole body is correspondingly affected.

We believe that a great deal of the animal food sold in our markets, and especially that which is consumed by the poorer classes, is unfit to nourish and sustain the human body. That there exists an evil of this character few reflecting persons will deny. To what extent it exists we do not pretend to know, but common sense teaches that animals driven from their natural grazing and water courses into cars and steamboats and hurried thence to the slaughter pens of Atlantic cities, cannot but suffer very greatly in weight and quality. Texas abounds in the very best beeves. They multiply rapidly and are comparatively of little value, inasmuch as there exists no market to which they can be driven with profit to the herdsman.

Some States of the West, fearing competition in this respect, have passed laws forbidding the driving of Texas herds through them. If we mistake not, such laws exist in Missouri, Tennessee, and Illinois, and though regarded by many as unconstitutional, inasmuch as such laws interfere with internal commerce between States, no one seems disposed to spend the time and money necessary to test the legal question. It may be doubted whether herds can be driven with profit from the pastures of Texas and thence forwarded by railroad to this city, but certain it is that cattle are now so numerous in that State, and the home market so insignificant, that they are comparatively worthless except for their hides. In what way can the fat herds of the West and Southwest be best brought to this market? In the more immediate Western States it is possible to construct cars so that the animals may be slaughtered there and the fresh beef delivered in a wholesome condition in this city. In the Southwest this plan seems at present impossible, and the only mode by which this object can be attained will be by boats constructed for the express purpose of carrying the slaughtered animals from the ports of New Orleans or Galveston direct to the Atlantic seaboard. This project seems to be a very difficult one, we admit, but science, well directed by capital, may yet accomplish the result.

VENTILATION---ITS NECESSITY AND NEGLECT.

In referring to this subject we are aware that we risk disgusting our readers by introducing a theme which has become hackneyed and threadbare by incessant repetition in newspapers, books, lectures, and by other means. Still it is none the less important, and that it is habitually ignored by thousands of otherwise sensible people is our excuse for a few practical suggestions.

The last generation paid no attention to this matter, at least in this country. They had no need. Dwellings were sufficiently ventilated without resort to special appliances for that purpose. The fires generally used were of wood, or, if coal was employed, it was burned in an open grate. The houses were not hermetically sealed boxes, with double windows, thick walls, and closely fitting doors and window sashes. The old-fashioned fireplace, or even the Franklin grate, gave large egress to the vitiated air, while the numerous cracks around doors and windows furnished sufficient pure air from the external atmosphere. Coal gradually usurped the place of wood for a fuel, and compelled the introduction of stoves, furnaces, and ranges, which gave out their heat, not only by imperfect radiation, but by the contact of hot iron plates with the air. This had the effect, in a close room, to destroy the natural humidity of the atmosphere, and for want of ventilation a prejudice against stoves and coal was engendered, as productive of disease. Perfect ventilation will remove these causes of complaint. The heat generated by the combustion of coal, whether anthracite or bituminous, when burned in a close stove, is not necessarily deleterious.

Oxygen, from its quality of supporting combustion and sustaining life—itself a form of slow combustion—was formerly called the "vital fluid." The effect of a fire in a room is to use up and absorb the oxygen of the air, rendering it unfit for breathing. To sustain life, therefore, as well as combustion, a fresh and continual supply of oxygen is needed. Yet this gas alone, unmixed with hydrogen and nitrogen, is not fit for either purpose—life or combustion. In either case it destroys—acts too rapidly—in one instance producing fever, and in the other destroying the fuel too rapidly. Ventilation, therefore, is as necessary for the fire as for the lungs. The fire of a stove is not the only source of the deterioration of the air in our rooms. Gas lights, lamps, and candles, absorb a large amount of the oxygen, and if the products of combustion are not visible in smoke, or unconsumed carbon, we flatter ourselves that no deterioration of the atmosphere of the room is caused. There is no combustion without the generation of carbonic acid, a gas as fatal to animal organisms as any drug in the apothecary's collection. Because we do not see this in the form of a smoke or a noxious vapor, we provide no means for its escape, and no means for introducing pure air. For our ordinary fires we are compelled to do this, as the results of their combustion would soon render our rooms uninhabitable.

It is calculated that each person consumes, on an average, five cubic feet of air in an hour; or, rather, extracts from it that portion capable of supporting respiration. Put one hundred persons in a room, as a hall, containing 22,500 cubic feet of atmospheric air, a room thirty feet long, twenty-five wide, and thirty high, and in four and a-half hours the air would be unfit to breathe. The increase of carbonic acid gas would soon prove deleterious. It is a beautiful provision of nature that this gas, ordinarily much heavier than atmospheric air, is, when first exhaled from the lungs, lighter than the surrounding air, and rises. In time, however, it cools and descends to our level, when we are compelled to inhale it again. For this reason low studded rooms are not healthy.

But if ventilation of rooms is necessary, it must not be supposed, what some have asserted and attempted to prove, that the proper ventilation of rooms adds nothing to the cost of heating in cold weather. If fresh supplies of air are introduced, these supplies must be heated to produce the requisite temperature, which necessitates an additional consumption of fuel. The object sought is, however, well worth the increased expense entailed.

It is unfortunate that our houses, especially our dwellings, have not been constructed, heretofore, except in rare instances, with ventilation as one of the objects. We must, then, adopt temporary measures to insure a fresh supply. For this purpose the opening of a window at the top and the admission of pure air by a door, or the lower portion of a window, on the opposite side of the room, is the most feasible means for ventilation. Currents of air must be avoided, and this can be done, in a measure, by stretching across the aperture a screen of thin muslin, or, better, perforated thin plates of tin or other metal. To be sure this is an imperfect an not altogether satisfactory method of reaching the object sought, but it is better than no ventilation.

This is a subject too important, and comprising too many conditions, to be justly considered in so brief an article as this. Our object is, however, to call attention to the necessity of proper ventilation, in the hope that it may awaken inquiry and stimulate to some exertion in the right direction.

The Arabic Numerals.

Several communications have been received in relation to the speculation on the Arabic numerals published in the SCIENTIFIC AMERICAN of the 20th ult. One correspondent says that the probable origin of the 2 and the 3 was like the 1, by vertical lines, instead of horizontal lines, as "Dominus" suggested. Another objects to the conjecture of the origin of the cipher. He says that M. Varuz, Professor of Mathematics in the normal school of Lausanne, Switzerland, published an arithmetical treatise in which he states that at first there were but nine figures. The surface to represent the relations of the numbers was divided into parallel, vertical, and horizontal columns, forming squares. The upright column on the right contained the simple units, the next tens, the next hundreds, etc. As the preparation of the diagram was not always convenient, the square was inserted at the side of a figure or between two figures, to denote the relative position and consequent value of the characters. In time, this square became an ellipse as it now is.

The "Scientific" in Texas.

An old subscriber in Texas, who has emerged from a five-years' non-intercouse sleep, occasioned by the war, and who has just received a package of our papers, writes as follows:—

"I think a great deal of the Bible and its truths. I can read it over and over, always finding something new and instructive. I really think it is the same with the SCIENTIFIC AMERICAN. It is suitable for all, rich and poor. By it, even ministers of the Gospel will find they can be interested and instructed."

OIL lamps, superseded everywhere else, linger still on the railways, themselves the most signal innovations of the age.

THE longest tunnel in England is the Box tunnel on the Great Western Railway, which is 9,680 feet long, 39 feet high, and 35 feet wide

© 1866 SCIENTIFIC AMERICAN, INC.

ISSUED FROM THE U. S. PATENT OFFICE

FOR THE WEEK ENDING OCT. 30, 1866.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & Co., Publishers of the SCIENTIFIC AMERICAN, New York.

59,156.—MODE OF EXTINGUISHING FIRE.—Charles Alden, Newburgh, N. Y.

First, I claim a building composed of a series of air-tight compartments separated from each other by air spaces or air chambers, for the purpose specified.

Second, The arrangement of pipes, d e f g, in combination with the air spaces, C D, and air-tight compartments, B, constructed substantially as described.

59,157.— APPARATUS FOR TANNING.—Alexander Appleby, Bromfield, Me.

I claim the hide-handling drum, as made, with inclined partitions, combined with and arranged within it, for the purpose of producing reciprocating movements of the pipes, while the drum may be in revolution, as stated.

I also claim the arrangement of the grated mouths, E, in the drum, and with its inclined partitions, substantially as specified.

59,158.—CLOTHES SPRINKLER.—Frederick Ashley, New York City.

I claim the arrangement of the spout, E, with the perforated plate, F, and the nozzle, C, with the screw cap, D, in combination with the reservoir, A, combined and operating in the manner and for the purpose herein specified.

59,159.—PROCESS OF MAKING RING JAR.—Jas. S. and Thos. B. Atterbury, Pittsburgh, Pa. Antedated Aug. 30, 1866.

We claim the arrangement of the parts forming a mold for producing jars and other articles of glass, substantially as herein described.

59,160.—WATER ELEVATOR.—W. E. Babcock, East Pembroke, N. Y.

I claim the shaft, B, provided with the ratchet, D, in connection with the drum, E, placed loosely on the shaft, and provided with the ratchet, F, and loose collar, G, and the case, H, having the oblique slots, b, made in it, through which pins, c c and d, attached to the collar pass, one pin, d, being provided with a weight, e, and all arranged to operate in the manner substantially as and for the purpose set forth.

59,161.—DEVICE FOR DISCHARGING BILGE WATER FROM THE HOLD OF A VESSEL.—Moses F. Bagley, Alton, Ill.

First, The hollow plunger, D, the bed plate, B, and the gland, C, when constructed and arranged substantially as herein described and set forth.

Second, I claim the plunger, D, the lever, E, and the fulcrum, E', when constructed and arranged as described and set forth.

59,162.—CARRIAGE AXLE.—Silas Barker, Hartford, Conn.

I claim the combination of a sleeve, C, with an axle, A, when the said sleeve is constructed and arranged so as to be adjusted thereon, substantially in the manner and for the purpose specified.

59,163.—FURNITURE CASTER.—James T. Barnes, Hudson City, N. J.

I claim the arrangement of the wheels, a a, in combination with the shoulder shank, A, arm, B, with its axles, d d, and the washers, c, and bolt, b, substantially as and for the purpose herein represented and described.

59,164.—WHIFFLETREE.—Lewis Barnes, Waterford, Mich.

I claim the malleable cast-iron plates, B, secured to the front and rear sides of the doubletree, A, by screws, b, and the shanks, c, of the hooks, C, and the malleable cast-iron plates, E E, secured to the front and rear sides of the whiffletrees, D, by screws, f, and the shank, g, of the eye, h, together with the trace hooks, F, provided with rings or bands, j, having internal screw threads to screw upon the ends of the whiffletrees, substantially as shown and described.

59,165.—QUARTZ CRUSHER.—Monroe L. Battell, New York City.

I claim the within described ore-crushing machine constructed with two sets of crushing jaws, and operated by a single intermediate or central shaft, substantially in the manner herein set forth.

59,166.—ROTARY STEAM ENGINE.—Joseph B. Bennett, South Brooklyn, N. Y.

First, I claim the combination, substantially as described, of the spring packing plates, F F, with the pistons of a rotary steam engine or rotary pump, for the purpose of greatly reducing the loss of power by friction and other causes, as herein before set forth.

Second, I claim the spring valves, G G, arranged and operated substantially as and for the purpose described, in combination with the cylinder, B, with its pistons and spring packing plates, as set forth.

59,167.—SLEIGH.—D. J. Bigelow, Barre Center, N. Y.

I claim the plates, d and c, and bolt, a, constructed as described, and arranged with the bars, B B, and bolster, E, as and for the purpose herein fully set forth.

59,168. — PRUNING SHEARS. — Frederick Bender, Baltimore, Md.

I claim the convex-edged knife, working in a slot in the concave holding jaw, and operating substantially as described.

59,169.—BEEHIVE.—T. F. Bingham, Gowanda, N.Y.

First, I claim the application of waxed cords, f, to frames, B, and to the spare honey boxes, to insure the building of straight combs, as set forth.

Second, The combination of the cap, G, and case, H, with the spare honey boxes, walls, A A, and comb frames, B, all arranged substantially as and for the purpose specified.

59,170. — BEEHIVE. — T. F. Bingham, Gowanda, N. Y.

First, I claim the triangular frames, D, divider, I, and notched end pieces, E, and guides, F, resting thereon, the triangular end pieces, E, slots, a, links, G, bar, H, spare boxes, J, and slats, g, when combined and operating substantially as described for the purpose specified.

Second, The construction of the triangular end pieces, E E, with the entrances and vestibules, as set forth.

Third, A triangular divider, I, with guides, constructed substantially

Fourth, The clamp, G, constructed as described, and arranged in connection with a bar, H, substantially as and for the purpose specified.

Fifth, Arranging the comb frames, D, end pieces, E, divider, I, clamp, G, cover strips or slats, g, boxes, J, and outer case, A, substantially as and for the purpose specified.

59,171.—DECK FOR CANAL BOAT.—Amos A. Bissell, Lockport, N. Y.

I claim the combination of the series of curved panels constructed of narrow jointed strips or boards, c c, segmental ribs, B, and cleats, d, with rope, g, and eyes, f f, or their equivalents, arranged as described, to form a portable deck covering, substantially as set forth.

59,172. — PULLEY. — Amos S. Blake, Waterbury, Conn.

First, I claim journaling a sheave or roller, D, in a swivel frame, C, substantially as and for the purpose specified.

Second, The combination of the swivel sheave frame, C, with the angular arms, B B, and bed plate, A, substantially as shown and described.

59,173. — STOVEPIPE DRUM. — Edward S. Blake, Pittsburgh, Pa.

First, I claim a radiator so constructed that the soot, dust, and other refuse of combustion will tend by its gravitation to collect to one point when released from the shell of said radiator, substantially as herein described and for the purpose set forth.

Second, The radiator, B, provided with the flues, R and C, openings, O and f, and valve, J, constructed, arranged, and operating substantially as herein described and for the purpose set forth.

59,174.—VARNISH.—Joseph Braddock, Indianapolis, Ind.

I claim a combination varnish compounded from the ingredients named, or their chemical equivalents, substantially in the manner and for the purpose set forth.

59,175.—SMOKE STACK FOR LOCOMOTIVES.—Hugh Brooks and James Ball, Zanesville, Ohio.

We claim the arrangement and combination of the curvilinear deflectors, c c c c, and cylinder of wire cloth, d d d, with the feathers or guides, f f f, placed between the inner or smoke tube, a a a, and the outer case, b b b, with the perforated base, h h, when constructed and arranged substantially as herein described and for the purpose specified.

59,176.—FENCE.—Jonathan Bundy, West Liberty, Iowa.

I claim the combination and arrangement of the blocks or cross pieces, H, wires, G and anchoring stones I, with each other and with the fence posts, B, substantially as herein shown and described and for the purpose set forth.

59,177.—MODE OF PREPARING BURNING FLUID.—R. E. Campbell, New York City.

I claim treating the first runnings of the distillate of petroleum, petroleum oil, or coal, by passing them through or mixing them with burnt clay, chalk, chloride of sodium, or other equivalent absorbent substances, in the manner and for the purposes substantially as herein set forth.

59,178.—UPPER JAW BIT.—F. B. Carleton, Jeffersonville, Vt.

I claim the arrangement with an ordinary bridle and bit, of the supplementary bit which is strapped to the upper jaw of the horse forward of the ordinary bit, substantially as described.

59,179.—CHEMICAL COMPOUND FOR THE MANUFACTURE OF MEDICATED GAS.—A. H. Carpenter, New York City.

I claim compounding certain chemical salts in the manner and proportions herein specified, for producing an electro-medical gas to be used and applied in the manner and for the purposes herein described.

59,180.—RAILWAY CHAIR.—Hiram Carpenter, New York City.

I claim the railway chair constructed with an elastic support combined with a loose jaw that locks into the body of the chair and is tightened by a key, substantially as described.

59,181.—TOOL SUPPORTER.—Asa L. Carrier, Washington, D. C.

I claim the slotted disk, B, rim, C, and spike or screw, A, when constructed, arranged, and used in the mode described so as to constitute a new article of manufacture, for the purpose specified.

59,182. — BURNING FLUID. — Benjamin H. Chadbourne, St. Louis, Mo.

I claim the combination of the ingredients herein described.

59,183. — MANUFACTURE OF SORGHUM SUGAR.—Francis M. Chalfant, Morgantown, West Va.

I claim the process of making sugar from sorghum, or its allies, substantially as above described.

59,184.—SMOKING PIPE.—George H. Chinnork, New York City. Antedated Oct. 19, 1866.

I claim the pipe stem consisting of the parts, A B C E F and G, combined, constructed, and arranged as and for the purposes herein described.

59,185.—PORTABLE FENCE.—Frederick C. Class, Roanoke, Ind.

I claim the brace post in combination with its lock and key, also the corner post in combination with the panel, as described. I claim the lattice panel with supporting bars as giving greater strength as a fence. I claim the peculiar construction of the lock and key in combination with the brace post, essentially as described.

59,186.—VARIABLE MEASURE.—Lewis Coates, Collamer, Pa.

I claim the notched staves, c, and catches, a, in combination with the movable button, B, and measure, A, constructed and operating substantially as and for the purpose described.

59,187. — DISTILLATION. — John F. Collins, New York City.

I claim the process, substantially as above described, of separating and obtaining alcohol or other volatile matters by constantly agitating the "wash" or other contents of the still or retort, by means of a current or currents of steam or gas or air forced into the same, and bringing the vapors in contact with currents of air from without, while passing from the still or retort into the conductor which leads to the worm or condenser, as above set forth.

59,188.—VESSEL FOR BEER, ETC.—William Compton, New York City.

I claim the flexible bag fitted as specified within a vessel and adapted to the reception of beer and other liquids and the exclusion of the same from contact with the air, as set forth.

59,189.—SAFE.—John B. Cornell, New York City.

I claim uniting parallel and contiguous plates of metal with each other by the act of filling the spaces between said plates with molten iron, or other metal or composition, and the inflow of a portion of the same into channels or recesses of a dovetail shape formed in the inner surface of said plates but not entirely through the same, substantially in the manner represented in the drawings and herein described.

59,190.—STANCHIONS FOR CATTLE.—John B. Crowell, Newport, N. H.

First, I claim the combination of the bolts, L, and rope, N, with each other and with the movable stanchions, D, and timber, B, substantially as herein shown and described and for the purposes set forth.

Second, The combination of the bolts, F, and springs, H, with the movable stanchions, D, and timber, B, substantially as described and for the purpose set forth.

Third, The combination of the bar, I, and lever, K, with the bolts, F, and timber, B, substantially as shown and described and for the purpose set forth.

Fourth, The combination of the springs, E, with the stanchions, D, and timber, B, substantially as herein shown and described and for the purpose set forth.

59,191.—SHOVEL PLOW. — John C. Daugherty, Bridgeport, Ky.

I claim each and every part of the fender described as above.

59,192.—PITMAN FOR HARVESTER, ETC.—J. W. Doty, Lockport, N. Y.

First, I claim the combination of the forked or pronged pitman head, D, secured to the ears or lugs, f f, by a screw bolt, j, taper, conical, or spherical wrist pin, A, and box, B, the whole arranged substantially in the manner and for the purpose set forth.

Second, I claim the tubular conical projection, m, of the lower end of the pitman, E, in combination with the socket, n, on the cutter bar, G, the bolt, H, provided with a nut, o, having a ratchet attached, with which a pawl, p, on the pitman engages, substantially as and for the purpose specified.

59,193. — SAW-FILING MACHINE. — John W. H. Doubler, Chicago, Ill.

First, I claim the combination and arrangement of the stationary jaws, E, a stationary rack, F, file guide, T, and holder, a, wheel, V, shaft, G, and screw, H, as and for the purposes specified.

Second, I claim the combination of the wheels, J I, spring catch, M, arms, L, shaft, G, and screw, H, with the stationary rack, F, substantially as and for the purposes set forth.

Third, I claim the combination with the arm, L, the arrangement of the movable slotted arc, N, and pin or stop, o, as and for the purpose described and set forth.

59,194.—WHEEL VEHICLE.—Jas. W. Drew, Stockbridge, Mich.

First, I claim the sliding boxes, h h, constructed and operating as and for the purpose herein set forth.

Second, I claim the tongue support, l, in combination with spring, m, constructed and operating substantially as herein specified.

Third, I claim the spring bars, g g, boxes, h h, tongue support, l, spring, m, the whole constructed and arranged substantially as herein described.

59,195.—WASHING MACHINE.—Noah Drew, Howell, Mich.

I claim the employment of the plungers, E, attached as described, in combination with the molded end board, D, and a yielding suds box, B, arranged and operated substantially in the manner and for the purposes herein set forth.

59,196.—GATE.—Eli Duncan, West Milton, Ohio.

I claim a gate composed of a series of horizontal bars, when the upper bar, A', is notched near one end, x, to catch a pin, d, which connects the upper ends of the bases, C C, and arranged with the roller, e, in the manner and for the purposes specified.

59,197.—TRAINING HOPS. — William C. Dunn, Greene, N. Y.

I claim the construction or use of a hop trainer, constructed and used substantially as described.

59,198.—STEAM HEATING APPARATUS.—John Elder, Jr., New York City.

I claim the coil of pipes, f g, extending up in the air pipe, a, and connected with the steam box at the lower end of the said coil, substantially in the manner specified.

59,199.—FENCE.—David S. Evans, Richmond, Ind.

I claim the arrangement and combination of the wedge post, d, the catch, m, and bevel, n, when used in a portable fence, all arranged and operating as set forth and described.

59,200.—SAW MILL.—W. W. Ewing, Mahoning, Pa.

I claim, First, The construction and arrangement of the two pairs of converging vibratory tension beams, F F, clamping the ends of the saw between their converging ends, substantially as and for the purpose herein specified.

Second, The combination of the pivot blocks, c c, having dovetail shanks, with the adjustable clamp bars, B B, having corresponding forms to fit the shanks of the pivot blocks, substantially as herein set forth.

Third, I also claim the method of hanging the saws between the tension beams by the V-shaped notches therein, and the peculiarly formed pivot bolts, H H, substantially as and for the purposes herein described.

59,201.—HANGING MILLSTONES. — Lewis Fagin, Cincinnati, Ohio.

I claim, First, The arrangement of the cock eye, A, cock head, B, openings, K, in the balance rim and driving lugs, c c, by which the point of balance is adjusted as described and for the purpose set forth.

Second, The construction of the balance rim with openings, K K, by means of which the driving lugs and driving surfaces are brought to view and rendered accessible, for the purpose of fitting.

59,202.—GATE HINGE.—Wickum Field and Robert Carruthers, Bergen, N. Y.

We claim the combination of the braces, h h', or equivalent, with the bearing, b, and jaws, d d', operating substantially in the manner and for the purpose specified.

59,203.—MACHINE FOR LEATHERING TACKS.—Wm. H. Field, Taunton, Mass.

First, I claim the elevators, P, for the purpose of elevating tacks from the hopper, J2, and depositing them upon the slide, K2, for the purposes and substantially as herein described.

Second, I claim the peculiar construction of the shaft or rod, A2, in halves, so that one or more nails or tacks may be leathered, substantially as herein described.

Third, The straight heading bar, with its end reduced to about the size of the tack, and working at right angles with the slide or nail, for the purposes and substantially as described.

Fourth, The quadrant, B2, in combination with the heading bar, for the purposes and substantially as set forth.

59,204.—CORNET AND OTHER WIND INSTRUMENTS. —Isaac Fiske, Worcester, Mass.

I claim, First, Interposing rubber or some other suitable elastic substance between the attachment or attachments of the main pipe with the bell and the bell of a wind instrument, to give greater freedom to the vibrations of the bell, substantially as set forth.

Second, The combination of ring or rings, a, and rubber, b, or its equivalent, with the bell, A, the main pipe, B, substantially as set forth.

Third, The combination and arrangement in a wind instrument of the cylinders in which the piston rods work and the valve stems in such a manner as to obviate the necessity of interposing anything between the valve stems and piston rods in order to operate the stems and valves except the cord, substantially as described.

Fourth, The special arrangement and combination of the valve stems, e f, and g, and rods, 1' 2' 3', and cylinders, 1" 2" 3", whereby the valves, cylinders, and finger pieces are of equal distances from each other, and yet all of the valve stems and valves are operated by cords attached directly to the ends or the rods which move in a line parallel to each other, substantially as set forth.

Fifth, The combination and arrangement with the cylinders, 1" 2" 3", of the supporting bar, G, as shown and described.

59,205.—MACHINE FOR RAKING AND LOADING HAY. —Thompson Frame, Barnesville, Ohio.

First, I claim the cam, w, on the shaft, f, in combination with the reciprocating levers, p q, the connecting rods, t s, and the reciprocating cross rakes, n n, for drawing the hay by their reciprocating motion into the chute, c, constructed and arranged as herein described.

Second, I claim also the platform, E, in combination with the reciprocating rakes, n n, and the chute, c, constructed and arranged as and for the purposes herein described.

59,206.—MANUFACTURE OF VINEGAR.—Terah M. Freeman, St. Louis, Mo.

I claim the formation of vinegar wash by adding alcoholic va

© 1866 SCIENTIFIC AMERICAN, INC.

pors to the liquids used and usually containing water, vinegar or acetic acid and ferment, substantially as set forth.

59,207.—SAFE.—Thomas D. Furlong and De Witt C. Freeman, St. Louis, Mo.

We claim the outside case, A, the inside safe, B, the cap, C, and the door, E, constructed and hermetically closed, and connected in the manner and for the purposes herein specified.

59,208.—CLOTHES WRINGER.—A. C. Gallahue, New York City.

I claim the tubular springs, H, in combination with the hollow screws, I, or their equivalents, and rod, G, arranged or applied to the upper ends of the parts, A B, to operate substantially as and for the purpose specified.

59,209.—LAST.—E. T. Green, Stoneham, Mass. Antedated October 20, 1866.

I claim a metallic pan or basin, E, or its equivalent, constructed and arranged for holding a false or movable bottom of a shoe last, in the manner and for the purposes substantially as herein set forth.

59,210.—HAND SPINNING WHEEL.—John Green, Joliet, Ill.

I claim the peculiar and particular arrangement of the cords and pulleys described, in combination with the inclined ways, b, and for the purposes described.

59,211.—GATE HINGE.—Burton Greenside, Fort Dodge, Iowa.

First, I claim the cogged hinge, E, formed in two parts, e1 and e2, when constructed and arranged substantially as herein described and for the purpose set forth.

Second, The combination of the bent lever, F, connecting rod, G, and arm, H, with each other and with the gate, A, the weight and post, D, substantially as described and for the purpose set forth.

59,212.—BRICK MACHINE.—Isaac Gregg, Philadelphia, Pa.

First, I claim the brush, M, so arranged and operated as to clear the upper surfaces of the pistons from superfluous clay in advance of the oiler.

Second, The combination of the revolving brush, M, and revolving oiler, N, in the same box, k, substantially as described.

Third, The combination of the heads or flanges, g, of the rods of the two sets of pistons with the stationary inclined projections, d and d', when the said heads and projections are so formed that when the heads of one set of piston rods traverse over one of the said projections, the former will be elevated by the latter, but will remain depressed while traversing over the other projection, all substantially as set forth for the purpose specified.

Fourth, The combination of the wheel, F and F', with the heads of the rods of the two sets of pistons, when the said wheels and rods are recessed or halved, substantially in the manner and for the purpose described.

59,213.—GRAIN GAGE.—Henry Haak, Myerstown, Pa.

First, I claim the measure, A', provided with the spring and striker, A and B, constructed and operated substantially as described.

Second, I claim the graduated beam, F, the bearing beam, E, tube, D, and stem, E', arranged and operated as described.

59,214.—PUDDLING FURNACE.—Daniel and Joseph Hall, Wheeling, W. Va.

First, We claim the improved iron-cased smoke stack of unequal diameters at the upper and lower parts, lined with fire brick of unequal thickness, supported on the pillars, b b b b, and constructed and arranged substantially as and for the purpose herein specified.

Second, We claim also the outer shell or casing, d d, constructed and arranged substantially as and for the purposes herein specified.

Third, We claim also the wrought-iron fore plate, r r, and the recess in the doorway in which it is inserted, in combination with the furnace door, p, constructed and arranged substantially as and for the purpose herein described.

Fourth, We claim also the wrought-iron side bits, s s, placed in a recess in the doorway of the furnace, substantially in the manner as herein specified.

Fifth, We claim also the horizontal or straight bottomed neck, E, supported on the foundation plate, q, resting on bearers, i i, which are sustained by the projections, b h, on the pillars, b b, constructed and arranged substantially as and for the purposes herein described.

Sixth, We claim also the ribbed binding plates, k k, in combination with the neck, E, constructed and arranged substantially as and for the purposes herein described.

Seventh, We claim also the improved inclined fire bridge, G, constructed substantially as and for the purposes specified.

59,215.—COTTON CULTIVATOR.—Joel A. Hall, Columbus, Ohio.

First, I claim the combination of the curved blades or scrapers, with the plows, B2, substantially in the manner herein shown and described, so as to plow the furrow, cut the weeds, and throw the earth upon the roots of the plants, all as set forth.

Second, I claim the combination of the toggle levers, I, with the plow beams, substantially as herein shown and described.

Third, I claim the combination of the guide with the toggle levers, I, substantially as herein shown and described.

Fourth, I claim the combination of the walking beam and treadles with the toggle levers, substantially as shown and described.

59,216.—MEDICINE FOR HORSES.—C. L. Hammond, North Java, N. Y.

I claim the above-described ingredients mixed as specified and for the purposes set forth.

59,217. — GRAIN-TALLYING MACHINE. — Andrew Harter, Delphia, Ind.

I claim the combination of the platform, B B', arm, C, and wheels, D, with the wheels, L, sleeve, h, and under plate, E, constructed, arranged, and operated in the manner substantially as shown and described and for the purpose set forth.

59,218.—RAILWAY CHAIR.—Nicholas Headington, Cincinnati, Ohio.

I claim the railroad chair composed of the seat, C, having the pendants, ribs, or flanges, C'' C''', in described combination with the strap, F, and gib and key, D E, or their equivalents, for the purpose set forth.

59,219.—MACHINE FOR WRINKLING THE INSTEPS OF BOOTS AND SHOES. — Christian Heisterman, Brownville, Pa.

I claim board, A, and blocks, a and A', when constructed and operated by a press, substantially in the manner and for the purpose set forth.

59,220.—SORGHUM STRIPPER.—John D. and Isaiah Hess, Union, Ohio.

First, We claim the combination of the cutter, G, with the device herein described for carrying the cane through the cutter or its attachment, to a sorghum mill, substantially as and for the purpose specified.

Second, The arrangement of the frame, A, cylinder, B, pulley, D, rollers, C, frame, B, spring, F, cutter, G, and support, H, substantially as described and represented.

59,221.—STEAM AND AIR EJECTOR.—L. E. Hewes, Albany, N. Y.

First, I claim the combination of the injector, W, projecter, Y, and ejector, Z, operating together substantially as described.

Second, The adjustable nozzle, h i, operating substantially as described.

Third, The expansible or contractible slit nozzle, i, constructed as described.

Fourth, The slotted nozzle, h', substantially as described.

59,222.—WELDING OR BRAZING.—A. J. Hindermeyer, Rohrertown, Pa.

I claim the use of the herein specified mineral substance as a flux for welding and brazing steel, iron or other metals.

59,223.—INK CUP.—P. K. Holbrook, Malden, Mass.

I claim the combination of the india-rubber cup, B, with the stand, A, both constructed and adapted to each other, substantially as described so as to form an ink stand which can be cheaply made and easily cleansed.

59,224. — WASHING MACHINE. — Reuben Hoover, Boonsborough, Iowa

I claim the revolving corrugated jointed cover, D, fitting loosely on the shaft, E, in combination with the tub, arranged to operate with the rock shaft, F, and strap, i, substantially as described and for the purpose specified.

59,225. — CANCELING APPARATUS. — Thomas S. Hudson, East Cambridge, Mass.

I claim the movable type as made with the longitudinal and transverse dovetails and with parallel plane surface sides, as and for the purpose set forth, in combination with the type chase as made with its type sockets or recesses, dovetailed longitudinally and transversely, or so as so hold the type in manner as specified, and with a wheel receiving space or chamber arranged within it and opening into each of such type sockets.

I also claim the ribbon box or case, as constructed, with the ribbon-receiving opening, the removable cap and winding spindle and its holding ring, or the equivalent thereof, the whole being applied substantially as specified.

59,226.—AUTOMATIC BLAST FOR CARBURETORS IN RAILROAD CAR, ETC.—Elias S. Hutchinson, Baltimore, Md.

I claim a pendulum suspended in a railroad car, carriage or vessel, and applied in connection with an air-pump bellows or compresser, to furnish a blast to a carburetor, substantially as described and represented.

59,227.—COMBINED VICTORINE CAPE AND CUFF.—D. Isaacsohn and Adolph Cohn, New York City.

We claim a victorine, collar or cape, made up of a collar or cape, A, proper, front lappets, a a, having combined at the extremities of the latter, so as to form one with the same, cuffs, B B, capable of being made convertible at pleasure into a muff, substantially as specified.

59,228.—WATER-PROOF MAIL BAG.—J. M. Jarrett, Brooklyn, N. Y.

First, I claim a floating compartment or pocket, O, in combination with the cover, A, arranged with the parts of a mail bag here in described, substantially as and for the purpose specified.

Second, I claim the hinged false bottom, L, in combination with the frame, B, springs, M, and catches, N, when arranged with the parts of a floating bag herein described, substantially as and for the purpose specified.

59,229.—MACHINE FOR CUTTING THE FRONTS OF BOOKS.—Isaac Jones, Camden, N. J. Antedated Oct. 20, 1866.

First, I claim the bar, P, with its gouge, T, in combination with the within described devices or their equivalents for holding the book, the whole being constructed and operating substantially as and for the purpose described.

Second, The combination with the above of an adjustable soft metal or wood strip, d, substantially as and for the purpose specified.

Third, The adjustable frame, C, with its adjustable plates, H H', in combination with the traversing bar, P, and its knife, T, substantially as and for the purpose set forth.

59,230.—GANG PUNCH.—John Halbrook Keating, Marblehead, Mass.

First, I claim the sliding punch-holding blocks, G, in combination with the screws, I, within the ways, H, operating substantially as and for the purpose specified.

Second, The former, P, in combination with the flexible strip, O, of the punches, E, substantially as described for the purpose specified.

Third, The combination and arrangement of the sliding blocks, G, screws, I, ways, H, rubber, O, punches, E, former, P, and vibrating arm, C, substantially as described and for the purpose specified.

59,231.— CULTIVATOR. — William Kiddoo, Keithsburg, Ill.

I claim the plow beam, F, in combination with the lever, G, or equivalent means for raising and lowering the plow beam without changing it horizontally.

The combination of the plow beam, F, lever, G, cord, E, and link, L, substantially as and for the purpose set forth.

The combination of the plow beam, F, and draft bar, K, substantially as and for the purpose set forth.

The combination of the plow beam, F, draft rod, K, and guide rod, S, for the purpose of retaining the said beam in proper horizontal position.

The adjustable suspended frame, N, provided with the lever P, and link, Q, or their equivalent, for the purpose set forth.

The shield, U, suspended by the rods, V, so that the plows may be raised or lowered without affecting the hight of the shields.

The levers, G and P, and their attachments, substantially as described, so as to enable the attendant to adjust the plows vertically or horizontally without leaving his seat.

59,232.— SULKY PLOW. — George Knight, Boone, Iowa.

I claim the attaching of the front end of the plow beam, H, to the pendent bar, E, through the medium of an adjustable plate, F, substantially as and for the purpose set forth.

I further claim the suspending of the plow beam, H, from the axle, C, by means of the cords or chains, c c, and the retaining or holding of the plow beam so as to prevent it from moving laterally by means of a chain or cord, d, substantially as set forth.

59,233.—WASH BOWL AND WATER CLOSET COMBINED.—Angelina J. Knox, Boston, Mass.

I claim the bowl, d, shelf c, door, b', privy bowl g, pipe, e, and pucking, c', all arranged substantially in the manner and for the purpose set forth.

59,234.—MACHINE FOR MAKING BUTTONS. — William Kraemer, Cincinnati, Ohio.

First, I claim making buttons by means of the traveling or shifting die, J, moving horizontally and transversely to, and adapted to work in co-operation with, a series of consecutively acting dies moving vertically, substantially as described.

Second, In the described combination with such traveling die, I claim the concentric arrangement of the compound die or punch, P P', shouldered counter, C C', and compound arm, c c', as and for the purpose set forth.

59,235. — WASHING MACHINE. — Daniel Kunkel, Oregon, Mo.

First, I claim the combination and arrangement of the frame, B, toothed wheel, E, toothed wheel, F, with pendent arms, b, and tub, A, with its projection, a, substantially as and for the purposes specified.

Second, The frame, B, forming the bearing for the shaft, C, and the upper end of the spindle, G, arranged with the toothed wheel, E, and wheel, F, provided with pendants, b, in combination with the tub, A, having studded bottom, all in the manner and for the purpose specified.

59,236.—SHEEP RACK.—Henry H. Ladd, Worcester, Vt.

I claim the combination of the trough, C, and sliding frame, B, with each other and with the frame, A, of the sheep rack, when said trough and sliding frame are constructed and arranged substantially as herein shown and described, for the purpose set forth.

59,237.—LAMP WICK.—Charles W. Le Count, Norwalk, Conn.

I claim a lamp wick composed of felt with longitudinal threads of cotton or other fibrous material running through it, substantially as and for the purpose herein described.

59,238.—MANUFACTURE OF ACETATE OF ALUMINA. George T. Lewis, Philadelphia, Pa.

I claim the manufacture of acetate of alumina by mixing the alumina extracted from kryolite with acetic acid, substantially as described.

59,239. — MANUFACTURE OF SULPHOACETATE OF ALUMINA.—Geo. T. Lewis, Philadelphia, Pa.

I claim the manufacture of sulphoacetate of alumina by mixing the alumina extracted from kryolite with acetic acid and sulphuric acid, or in the place of the sulphuric acid sulphate of alumina or alum, substantially as described.

59,240.—SEWING TABLE FOR BOOK BINDERS.—Marshal T. Lincoln, Washington, D. C.

I claim the adjustable sewing bench, A B, constructed and operating substantially as described.

59,241.—CORK PULLER.—Karl Loeffler, Hoboken, N. J.

I claim as a new article of manufacture a cork puller, composed of a thin shank, A, handle, B, and a tooth, C, as described.

59,242.— DOUBLE HEADED WRENCH. — John J. Love, New York City.

I claim an improved wrench formed by the combination of the right and left screw, C, with the parallel-moving bars, A and B, having the jaws, a1 and a2, and b1 b2, formed upon their ends, the parts being constructed and arranged substantially as herein described and for the purpose set forth.

59,243.—HOISTING AND DUMPING COAL. —George Martz, Pottsville, Pa.

First, I claim the combination of the platform, constructed and operating as described with the breast of the chute, which tilts the rising platform into an inclined position.

Second, The arrangement of the section blocks, L L, and the gaps, N, in the guides, operating as described.

Third, The curved face to the platform acting in combination with the supporting breast, H, as and for the purpose described.

59,244.—SLEIGH BRAKE.—J. R. McAlister, Richville, N. Y.

I claim the brake shoes, C, and chains, D, connecting them to the pole, G, hung to the roller, I turning in the sled frame when combined and arranged together, substantially in the manner and for the purpose described.

59,245.—MACHINE FOR BORING WAGON HUBS.—J. R. McAlister, Richville, N. Y.

I claim the boring machine herein described, the same consisting of the chuck, B, shaft, I, curved arm, M, having slotted end, L, and eye, N, knife-carrying bar, Q, sliding frame, S, adjustable clasps, U, arranged and operating substantially as described for the purpose specified.

59,246.—METHOD OF DECOMPOSING STEAM.—James McGeary, Salem, Mass.

First, I claim subjecting steam for decomposition to the action of alternate superheating and decomposing surfaces, in the manner substantially as and for the purpose herein described.

Second, Subjecting the resulting gases to the action of bituminous coal, petroleum, or other carbonacious material, when used in the manner and for the purpose set forth.

Third, The apparatus, as shown and described, when used for the purpose set forth.

59,247.—PROCESS FOR PRESERVING MEAT.—Harrison B. Meech, Fort Edward, N. Y.

First, I claim the within-described process of curing meat by subjecting the same first to a pressure under water and then to a pressure under the antiseptic material used in the process, substantially as and for the purpose set forth.

Second, Washing the meat under the pressure, substantially as described.

59,248.—FASTENING FOR BARN DOORS.—David N. Minor, Bridgewater, Mich.

First, I claim the combination of the spring, I, with the door, D, and with the standard, F, substantially as described and for the purpose set forth.

Second, The combination of the guide, O, with the sill, B, of the door frame and with the standard, F, substantially as described and for the purpose set forth.

Third, The combination of the three catches, J, with the standard, F, substantially as described and for the purpose set forth.

Fourth, The combination of the sliding bar, L, clasps, K, and hooks, M, with each other and with the door, E, and with the catches, J, substantially as described and for the purpose set forth.

59,249.—WIND WHEEL.—John H. Morse, Peoria, Ill.

I claim the regulating fan, A, in connection with its balance weight, R, cog wheel, M, rack, L, steel rod, J, clutch, K, collar E, lever rods, c c c c c, attached to fans, B B B B B, working in eyes, f f f f, in flange of collar, E, substantially in the manner and for the purpose specified.

59,250.—FASTENING FOR KNOBS FOR FURNITURE. L. B. Myers, Elmore, Ohio.

I claim fastening furniture knobs to drawers or doors by means of two pins and a central screw, substantially as and for the purposes herein specified.

59,251.—CURING HIDES AND SKINS.—Henry Napier, Elizabeth, N. J.

I claim the use of carbolic acid, or of creosote, in any form, and either alone or in combination with each other, and with other substances, such as a metallic salt, glycerin, etc., for the purpose herein set forth.

59,252.—STEAM PISTON VALVE.—William Nichols, Elmira, N. Y.

I claim the valve shell, A, constructed as described, being enlarged at a, and provided with cup, B, cast as a part of the shell and attached at b b, so as to form the enlarged circular port, G, in combination with the valve, E, and rod, D, in the manner and for the purposes described.

59,253.—CORN POPPER. — William W. S. Orbeton, Haverhill, Mass.

I claim, in combination with the basket, A, and its handle and supporting device or devices, a mechanism or means whereby a reciprocating rotary or partially reciprocating rotary motion may be imparted to the said basket, substantially as and for the purpose set forth.

59,254.—BIT STOCK.—Wm. W. S. Orbeton, Haverhill, Mass.

I claim the bit stock, composed of the body portion, A, the furcated head or jaws, a, the rotary sleeve, D, and its operative mechanism or equivalent, the centralizer, C, and the spring, G, the whole being constructed and combined together in manner and so as to operate as set forth.

I claim my improved centralizer, C, constructed in the manner as described, and applied to the bit-receiving socket, and so as to operate with the jaws, a, as specified, and by means as set forth.

I also claim the jaws, a, constructed of one piece of metal and of the tapering form, and with lips, b, as described and shown, when combined with the sleeve, D, made and applied to the said jaws, in manner and so as to operate therewith, and by means substantially as set forth.

59,255.—COMPOUND FOR FEEDING STOCK.—Charles G. Otis, Troy, N. Y.

I claim the compound feed of ground grain and oil, or flax-seed meal, compressed into packages for transportation, substantially as described.

59,256.—PULLEY.—R. W. Parker, Woburn, Mass.

First, I claim the pulley, D, with its movable rim, d, attached to the arms, e e e e, by the screws, 1 2 3 4, through holes in the ends larger than the shanks of the screws, in combination with the friction wheel, F, or their equivalents, constructed substantially in the manner and for the purposes described.

Second, I claim the loose, self-adjusting roller or detached revolving weight, E, in combination with the belt, C, and pulley, D, constructed and operated substantially as and for the purposes herein set forth.

© 1866 SCIENTIFIC AMERICAN, INC.

9,257.—Rubber Attachment to Washboard.—Samuel Peck, West Haven, Conn.

I claim the rails, a, on the sides of the washboard, A, in combination with the slotted cars, b, on the ends of the rubber, B, substantially as and for the purpose set forth.

59,258.—Trace Connection.—James E. Pierce, West Boylston, Mass.

I claim the combination, as well as the arrangement, of the shield, b, with the guard, D, and its latch, applied to the trace pin, as set forth.

I also claim the combination of the finger rest, C, with the guard, D, and its latch, applied and arranged in manner and so as to operate with the trace pin, substantially as specified.

I also claim the combination of the notch, a, in the trace pin, with the shield, the guard, and the spring latch, arranged together and so as to operate with the said trace pin, substantially as hereinbefore set forth.

59,259.—Machine for Preparing Cotton for Carding Engine.—Robert Pilson, Laurel, Md.

First, I claim the combination of two or more sets of drawing rollers with two or more toothed cylinders, when the rollers and cylinders are arranged in the order described, and the teeth of the second, and each succeeding cylinder are finer and more thickly set than those of the cylinder immediately preceding it.

Second, The combination of two or more sets of drawing rollers and two or more toothed cylinders, the teeth of the second and each succeeding cylinder being finer and more thickly set than those of the cylinder immediately preceding it, with two or more previous cylinders, through which dust and other impurities may pass, and between the surface of which and a suitable roller the opened fibrous material is delivered from each toothed cylinder, passes, and is partially condensed before it is presented to the action of the next cylinder.

Third, The combination, in a suitable case or apartment, of the previous cylinders, E1 E2, and deflectors, F, when the said apartment is provided with an exhaust, arranged in respect to the said rollers and deflector, substantially as shown and described.

Fourth, The combination of the previous rollers, E1 E2, and fluted roller, I', the three operating to condense the loose fibrous material as received from a toothed cylinder, and the roller, I', so arranged in relation to the roller, E2, as to act as a doffer for that roller.

Fifth, The combination of the fluted drawing rollers, B, smooth roller, B1, cleaning knife or bar, C, and toothed cylinder, D, substantially as and for the purpose described.

Sixth, The tapering lap roller, H, as and for the purpose described.

Seventh, The combination and arrangement of the several devices, as a whole, herein described and constructed, and operating to draw, open, clean, condense, and wind into a lap, cotton or other fibrous material, ready for the carding machine.

59,260.—Apparatus for Preventing the Escape of Gases from Soap Kettles, Rendering Apparatus, etc.—William H. Pinner, New York city.

I claim the condensing tube, d, and vapor tube, f, in combination with the kettle and furnace for boiling fats, soap, or other similar substances, for the purposes and as specified.

59,261.—Piano Seat.—Louis Postawka, Boston, Mass.

I claim the combination of the socket sleeve, a, the hand wheel, f, connected therewith by the hub or revolving nut, d, and the slotted screw, b, for elevating and depressing piano seats without turning them round, constructed and operating substantially as herein described.

59,262.—Plow.—Jackson Price, Greenfield, Ind.

First, I claim the arrangement of the plow frame, K, and springs Q R, for regulating its motions, substantially as described.

Second, The pivoted tongue, D, and latches, G H, operating substantially as described.

Third, The foot levers, I J, in combination with the tongue, D, and latches, G H, operating substantially as described.

59,263.—Seed Drill.—Thomas D. Price, Carrollton, Ill.

First, I claim the covering wheel, B, when constructed with the adjustable rims, b2 and b3, substantially as and for the purpose described and set forth.

Second, I claim the covering wheel, B, in combination with the disk, F, when these two parts are constructed as to operate conjointly, as herein described and set forth.

Third, I claim the disk, F, in combination with the brush, H, and spring, I, for the purpose of preventing the clogging or stoppage of the seeds, as described and set forth.

Fourth, I claim the arrangement of the gate, K, and its operating devices substantially as herein described and set forth.

59,264.—Wind Sail.—John C. Raymond, Greenpoint, N. Y.

First, I claim a wind sail, provided with four or more wings and center partitions or gores, C, substantially as and for the purpose described.

Second, Providing the wind sail with a top which extends beyond the circumference of the barrel, substantially as and for the purpose set forth.

59,265.—Sewing Machine. — E. P. Richardson, Lawrence, Mass.

I claim the combination of the foot, F, and the guard or guide, G, arranged to operate substantially as and for the purpose specified.

59,266.—Nutmeg Grater.—John Riddell and Boyd Allen, Boston, Mass. Antedated Oct. 18, 1866.

First, We claim the spherical grater, C, arranged within the casing or chamber, E, and operating as and for the purpose specified.

Second, We claim the combination of the spherical grater, C, with the casing, E, and chambers, A, as and for the purpose specified.

59,267.—Mold Board for Plow.—L. P. Rider, Munson, Ohio.

I claim the construction and arrangement of the plow mold board in the manner and for the purpose set forth.

59,268.—Chalk-line Winder.—J. H. Rose, Mount Sterling, Ill.

I claim, as a new article of manufacture, the line winder herein described, the same consisting of the coil spring, b, spindle, c, and reel, d, in combination with the partitioned box, A, and handle, B, substantially as and for the purpose specified.

59,269.—Horse Cultivator and Hoe.—Amos W. Ross, Northfield, Mass.

First, I claim the combination of the adjustable wheels, E, and adjustable supporting arms, D, with each other, and with the front and rear ends of the central beam, B, substantially as herein shown and described.

Second, The teeth, F, and adjustable uprights, G, in combination with the cultivator beams, A B C, substantially as herein shown and described.

Third, The long hoes, H, in combination with the central tooth, F', and the rear side teeth of the cultivator, substantially as herein shown and desribed.

Fourth, The combination of the adjustable curved hoes, I, with the rear ends of the long hoes, H, substantially as herein shown and described.

Fifth, The combination of the rear governors or adjusting rods, J, with the curved hoes, I, and the rear ends of the side beams, B C, substantially as herein shown and described.

Sixth, The combination of the central or adjustable governor, K with the central beam, B, substantially as herein shown and described.

Seventh, The combination of the guard knife, L, and draft hook, M with each other, with the forward end of the central beam, B, and with the front central tooth, F, substantially as herein shown and described.

Eighth, The combination of the slotted adjusting bars, N, bolt, n1, and nut, n2, with each other, and with the beams, A B C, substantially as herein shown and described.

Ninth, A combined horse cultivator and hoe constructed and arranged substantially as herein shown and described.

59,270.—Carpet Bag.—E. A. G. Roulstone, Roxbury, Mass.

First, I claim the method connecting the open part of each half of the bag leather to its frame, by fastening the edge to the outer surface of the frame, said frame projecting into instead of from the bag, substantially as set forth.

Second, Also the band, i, doubled over the edge of each frame, and embracing between its edges the adjacent edges of the frame and bag leather, substantially as set forth.

Third, Also applying the lock to the inner surface of one of the frames, substantially as described.

Fourth, In combination with a carpet or leather bag having two compartments connected as described, the protecting band, k, and the fastening of the flap or fall, when made to slide or catch into the frame, as described and set forth.

59,271.—Traveling Bag.—E. A. G. Roulstone, Roxbury, Mass.

First, I claim a metal bag frame, when constructed and arranged with a groove for receiving and securing the bag leather, or body, as described.

Second, Also a traveling bag in which the frame is united to the leather or body thereof as described.

Third, Also the locking spring device, as described and set forth.

59,272.—Trunk.—E. A. G. Roulstone, Roxbury, Mass.

I claim the employment of the angle frames to support and strengthen the trunk body, when applied to the interior of the body, with each frame bent transversely and longitudinally, as described, and with the side of the body lapped over the end, or vice versa, and riveted to the angle frame, substantially as described.

I also claim the guards, e, when made with extensions, f, and riveted to the frame, x, substantially as set forth.

I also claim the guards, h and i, when shaped and riveted to the angle frames substantially as set forth.

I also claim making the guards, i, with projections, i2, and shoulders, l, to protect the casters, k, substantially as set forth.

I also claim the hinges, m, when each is bent around and riveted through the back and end of the body to the frame, x, and is extended below the top line of the lower part, b, in the manner described.

Also the spring latches, O, when made and applied substantially as set forth.

Also the application of springs, v, to the webbing, substantially as and for the purpose set forth.

59,273.—Car Brake.—Lorenzo D. Rundell, South Westerlo, N. Y.

I claim the combination of the lever pawl, i, and link, e, when hinged and pivoted as herein described, and arranged in relation to the ratchet wheel, c, in the manner and for the purposes herein specified.

59,274.—Washing Machine.—N. M. Sanford, Vienna, Ohio.

I claim the hinged hub, I, arranged with the lever, A, and movable brace, C, in combination with the post, H, substantially in the manner and for the purpose as herein set forth.

59,275.—Sawing Machine.—Charles W. Sappenfield, Crawfordsville, Ind.

I claim the operating device of a sawing machine herein described, consisting of the clutch, I, fly wheel, H, shaft, B, lever, J, crank wheel, L, pitmen, M and N, swinging pitman, O, and guides, P and R, arranged and operating substantially as and for the purpose specified.

59,276.—Hitching Device.—Charles H. Sawyer, Hollis, Me.

I claim the combination of the V-shaped spring and case, constructed, arranged, and secured in the modes and for the purposes herein set forth.

59,277.—Halter.—Charles H. Sawyer, Buxton, Me.

I claim the clamp having the three holes, when applied to a halter, as and for the purposes set forth.

59,278.—Whip Socket.—Henry Sayler, St. Paris, Ohio.

I claim a whip socket provided with the clamping jaws and a lock, when arranged to operate as and for the purpose set forth.

59,279.—Cultivator.—E. S. Segar and J. C. Ormiston, Erie, Ill.

We claim the application to a corn plow or cultivator of the crotch, beams, and strap, revolving hinge, and pitman rod, iron cranks, ratchet circle, and spring catch lever attached to the beams by the pitman rod and hinge to raise and lower the beams and shovels, and the blade hinges to attach the inside shovel standards to the beams; the brace foot stirrup to guide the inside shovels and the crutch bearing seat, as herein described, reference being had to the drawings herewith submitted.

59,280.—Spittoon for Railroad Cars.—J. H. Seymour, Hagerstown, Md.

I claim the arrangement, in combination substantially as herein described, of the bowl, A, lid or cover, B, with the valve, C, and rod, f, when operated automatically by the opening of the lid, essentially as and for the purpose or purposes herein set forth.

59,281.—Manufacture of Paper.—Tal P. Shaffner, Louisville, Ky. Antedated Oct. 17, 1866.

First, I claim the depositing distributively in pulp one or more kinds of metallic powder immediately before said pulp is woven into paper, the object being to scatter the metallic particles into the body of the paper manufactured from said pulp, substantially as hereinbefore described.

Second, The covering or saturating paper with dissolved caoutchouc or india-rubber, for the purpose of holding metallic powder upon the surface of, or for carrying the said powder into the body of the paper covered or saturated, substantially as hereinbefore described.

Third, The manufacturing of paper by placing upon an inner surface thereof a coating of dissolved india-rubber or caoutchouc, either mixed or unmixed with metallic powder, or by spreading the powder over the surface of the india-rubber coating, contemplating the covering of said metalized surface with a film of paper woven thereon from pulp or by pressing another sheet of paper in such a manner as will unite the whole practically as one body of paper, substantially as hereinbefore described.

59,282.—Churn.—Zaccheus B. Shannon, Port Washington, Ohio.

First, I claim the rotary dasher, C, constructed and operating substantially in the manner and for the purposes hereinbefore described.

Second, The rotary dasher, C, center box, B, and churn, A, constructed and operating substantially in the manner and for the purposes hereinbefore described.

59,283.—Seeding Machine. — Joseph D. Smith, Peoria, Ill.

First, I claim the bar, q, the pin, e, or its equivalent, and the bars, A' and P, constructed and used for forming an adjustment, as herein fully set forth.

Second, The bar, q, the pin, e, and the slides, a a, arranged and constructed as and for the purpose herein specified.

Third, The combination of the slides, T and U, constructed and arranged together, as and for the purpose herein specified.

Fourth, The combination of the scraper, g, the slotted piece, f, the rod, h, and the foot piece, i, constructed and used as and for the purpose set forth.

Fifth, So arranging the hounds, H H, with the hounds, C C, that when the driver changes his position to the rear of the seat, the said hounds, H H, bear against the under side of the hounds, C C, and thus make a rigid machine, as and for the purpose set forth.

59,284.—Dental Plugging Instrument.—George B. Snow and T. G. Lewis, Buffalo, N. Y.

First, We claim causing the tool holder to recede from the hammer immediately after a blow is given, in order to obtain distance between the hammer and the head of the tool holder for a new blow, substantially as described.

Second, Placing a spiral spring, G, in the top of the case to act upon the hammer in combination with either the adjusting stopper, I, or screw cap, H, for the purpose of causing the hammer to give heavier or lighter blows, as required.

Third, The combination of the ring, R, and stop screw, S, and collar, u, for the purposes and substantially as set forth.

Fourth, We claim constructing the lifting bar, D, with a bent end, in combination with a receiving hole in the upper end of the tool holder, as shown at d', and with a notch or shoulder at its upper end, as shown, d3, to allow it to engage with the stops, L L', on the hammer, for the purpose of forming a direct connection between the tool holder and hammer, substantially as set forth.

Fifth, The feather, O, in combination with the hammer, F, for the purpose of arresting the descent of the hammer, and holding it at that point until again raised, substantially as described.

59,285.—Wagon Brake.—T. G. Springer, Conneautville, Pa.

First, I claim pivoting eccentrics, g g', h, which are constructed substantially as described, to a fixed bar, F, and a movable bar, E, in combination with brake shoes, k k, or their equivalents, substantially as specified.

Second, The hooded brake shoe, k, applied to rocking eccentrics or cams, g, substantially as described.

Third, Connecting the pivoted eccentric, g g, to the sliding brake bar, E, by means of pins passing through slotted portions, h, substantially as described.

59,286.—Machine for Assorting Bristles.—Nathan H. Spafford, Baltimore, Md.

First, I claim the box, H, as constructed with the slide, v''', and spring, x, as arranged and operated for the purposes set forth.

Second, I claim the knives, a', as arranged in combination with the box, H, for the purpose set forth.

Third, I claim the combination of the box, H, with the feed carriage, O, and slide table, Y, the whole being constructed, arranged, and operated in the manner substantially as and for the purposes described.

Fourth, I claim the method of regulating the forward feed of the bristles without altering the speed of the main shaft by means of the cam, g, the lever, S, and pins, i i, the slotted plate, k, spring, j, and frictional pulley, R, the whole being arranged and operated in the manner substantially as set forth.

Fifth, I claim the combination of the box, H, or its equivalent, with the jaws, G' and G'' or their equivalents, when the former is kept stationary during the descent of the latter to seize the bristles and is afterward fed forward when the jaws near the highest point of their ascent, for the purpose described.

Sixth, I claim the slide, G', and jaws, G'', the spring, 18, cam, 20, shaft, 9, and crank, K, in combination with the adjustable stops, L and 21, the whole being constructed and operated in the manner and for the purposes described.

Seventh, I claim the combination of the jaws, G' and G'', with the arms, n, the lever, U, and slide bar, F, the whole operating in the manner and for the purposes described.

Eighth, I claim the combination of the arms, n, of the lever, U, and slide bar, F, with the friction slide, I', and receiving box, I, all being arranged and operated in the manner and for the purposes set forth.

Ninth, I claim the box, I, as constructed in combination with the slide, I', rod, 3, and spring clamp, c, for the purpose of receiving bristles.

Tenth, I claim the india-rubber, 14, or its equivalent, fixed to the jaw, G'', when used in connection with the fluted steel, 15, or its equivalent, fixed to the jaw, G'.

Eleventh, I claim the adjustable rod, N, in combination with the slide, G, as and for the purpose set forth.

Twelfth, I claim the slide, 4, the cam, 10, the adjustable slotted standard, 5, operating as and for the purpose described.

Thirteenth, I claim the gear, P, the rack bar, Q, the carriage, O, and the thumb screw, w'', in combination with the shaft, h, as shown and described.

Fourteenth, I claim the combination of the box, H, and its attachment, the platform, V, the rack bar, S, carriage, O, gear, P, thumb screw, w'', shaft, h, feed wheel, R, friction spring, W, spiral spring, j, lever, S, cam, D, slotted plate, K, jaws, G' G'', slide, G, connecting rod, N, slide, 4, lever, U, slide, F, receiving box and slide, I, substantially as and for the purpose set forth.

59,287.—Letter-box File.—T. K. Sterrett and W. R. Farrell, Philadelphia, Pa.

We claim the board, C, staples, D, the frames, F and G, and their extension portions, I, slotted bar, K, rack, N, pinion, O, shaft, P, and spring, R, toothed collar, T, notched collar, U, arranged with the box having grooves, S and L, as described, and operating substantially as and for the purpose specified.

59,288.—Boots and Shoes.—Oscar Stoddard, Jackson, Mich.

I claim constructing the heels of boots and shoes of two parts, A B, the former part, A, being permanently attached or secured to the boot or shoe, and the other part, B, made separately or detached, and secured to A by means of a fastening, substantially as shown and described.

59,289.—Raising and Lowering Carriage Tops.—George Stover, Centre Hill, Pa.

I claim combining with the bows of a buggy or carriage top the hinged arcs, and rigid arms, with suitable catches for connecting or disconnecting them, and so arranging them on the inside as that the person occupying the seat may raise or lower the top at pleasure and hold it at half or full up, substantially as herein described and represented.

59,290.—Fruit Basket.—M. L. Stray and O. A. Stray, Willoughby, Ohio.

We claim the described basket, when constructed and arranged in the manner specified, being a new article of manufacture.

59,291.—Thrashing Machine.—E. Dwight Street, East Haven, Conn.

I claim the combination of the beater, D (one or more), the table, A, treadle, E, and spring, I, arranged to operate in the manner described.

59,292.—Device for Stretching Leather.—W. Strevell, Jersey City, N. J.

I claim the combination with the sliding jaws or clamps E, of the cross bar, H, connected therewith by rods, I, having rubber or other elastic cushions or springs, J, substantially as and for the purpose described.

59,293.—Cotton Tie.—Marcus A. Tarleton, New Orleans, La.

First, I claim the tie or buckle, A, when constructed and operating as herein described for the purpose set forth.

Second, The combination of the tie or buckle, A, with hook iron, when those parts are united and operate as described, for the purpose set forth.

59,294.—Regulator for Hot-air Furnace.—Albert H. Tingley, Providence, R. I.

First, I claim the combination of the two vessels, A C, connected together by the pipe, D, substantially as described and for the purpose set forth.

Second, The adjuster, E, constructed as described, by means of which the general effects of the expansion and contraction of the air, gas, or expansive fluid in the vessel, A, upon the damper, R, is controlled, substantially as set forth.

Third, The combination of the indicator, L, or its equivalent, by which the condition of the fire or the position of the damper is indicated by the expansion or contraction of the air in vessel, A, with the vessels, A C, substantially as described and for the purpose set forth.

Fourth, The arrangement of the damper, R, and ventilator, t, upon the same spindle, b, substantially as described and for the purpose set forth.

59,295.—Pianoforte Action.—William V. Wallace, New York City.

I claim making the connections or joints between the key and hammer of a piano action, of hard rubber, or its equivalent moisture-resisting gum or compound to prevent swelling and consequent binding of said parts, substantially as described.

59,296.—Rudder. — Maximilean Wappick, Sacramento, Cal.

I claim providing the rudder blade with slots forming openings through the entire body of the rudder in such a manner

© 1866 SCIENTIFIC AMERICAN, INC.

as to allow a partial efflux through said openings and thereby prevent the backing of water at the same time that the comparative vacuum on the aft side of the rudder blade in steering is being filled with increased rapidity for the purpose of more evenly balancing the pressure of the water on the forward and aft side of the rudder so as to reduce the strain on the pintles and facilitate the turning and handling of the rudder in steering a vessel.

Second, I claim constructing a rudder of tubes or rounded bars firmly braced and framed, substantially as specified, for the purpose of obtaining with a small rudder blade a great effective steering action, and with a reduction of weight of material an increased strength of rudder.

Third, I claim providing the rudder step and shoe, and the pintles and braces, or their equivalents, with concentric grooves and rings, substantially as and for the purpose set forth.

59,297.—EXTENSION LADDER.—Thos. Watson and Chas. Berry, Brooklyn, N. Y.

We claim, First, The frame, F, constructed as herein described when used for supporting and operating an extension ladder, substantially as described.

Second, The combination of the windlass, N, with the rear end of the frame, F, for the purpose of raising and lowering an extension ladder, substantially as described.

Third, Connecting the rear carriage frame, F, to the forward part of the truck, in the manner described and for the purpose set forth.

Fourth, Constructing the side bars of the ladder in the forms herein shown and described, so that the side bars of each part may form slide guides for the adjacent parts, when raising and lowering the ladder.

59,298.—CARPET FASTENER.—Willis Weaver, Salem, Ohio.

I claim the carpet fastener consisting of a wire with hooked ends, b, and bent or turned at the middle to form eyes, a, as and for the purpose specified.

59,299.—MOP HEAD.—Irving E. Weston, Winchendon, Mass.

I claim uniting the outer jaw of a mop to the socket by means of a collar and projection, and the inner jaw to the socket by means of a screw and thread, and so that by turning either the mop head or the handle the inner jaw will travel to or from the outer one, but when the material is clamped between the jaws, then the collar shall be rigid on the socket by means of the screw drawing and holding them tightly together, in the manner and for the purpose set forth.

59,300.—MACHINE FOR SOWING PLASTER, ETC.—Seth Wheelock, Richmond, Va.

I claim the arrangement and combination of the triangular spiked bar, D, and connected lever, L, with the hopper, H, and bed frame, A, substantially in the manner and for the uses herein specified.

59,301.—DECARBONIZING FURNACE.—Samuel H. Whitaker, Covington, Ky.

I claim, First, The inclosed auxiliary chamber or chambers, B, communicating with the bottom of the furnace, and provided at the top with one or more downward discharging tweers, placed out of contact of the molten metal, for the objects stated.

Second, The annular blast chamber, B, which surrounds the lower portion of a blast furnace, and is provided with one or more pairs of opposite and downwardly directed tweers out of contact with the molten metal, substantially as set forth.

59,302.—HARVESTER.—William N. Whitely, Jr. Springueld, Ohio.

I claim, First, The diagonal back brace, E, in combination with the main frame, A A B C, and the drag bar, D, as and for the purpose set forth.

Second, The sector standard, I, constructed in the form shown and described, in combination with the driving wheel and main frame of a harvester.

Third, The sector plate, H, provided with the hooking flange, f, in combination with the curved sector standards, I, and the main frame of a harvester, for the purpose set forth.

Fourth, The brackets, K, in combination with the curved sector standards and driver's foot board, K, of a harvester, for the purpose of strengthening and supporting said standards.

Fifth, The driver's foot board, K, and tool box, L, when arranged as shown and described.

Sixth, The adjustable lever, O, in combination with the tongue, M, for the purpose of controlling and changing the angle of the tongue to the main frame.

Seventh, The levers, O and p, spring, r, and pin, m, in combination with the disk, P, and tongue, M, for the purpose set forth.

Eighth, The spring foot latch, Q, in combination with the strap, R, tongue, M, and main frame of a harvester, for the purpose set forth.

Ninth, The box, U, constructed as described, in combination with the crank shaft, T, cross bar, C, and diagonal brace, E, for the purpose of protecting the shaft, T, and strengthening the frame, as set forth.

Tenth, The vertically and laterally-adjustable, spring-tightening pulley, W, when constructed as described.

59,303.—HARVESTER.—William N. Whitely, Jr. Springfield, Ohio.

First, I claim, in combination with the quadrant, J, and rake, N, arranged and operating substantially as set forth, the guides, E and F, and arm, M, substantially as and for the purpose described.

Second, I claim the stationary hollow spindle, T, its outside surface forming the bearing for the master wheel and its inside surface forming the bearing for the rake crank shaft, substantially as shown.

Third, I claim supporting the master wheel upon a stationary hollow spindle secured at one end only, in combination with the rake crank shaft running within the spindle.

Fourth, Driving an automatic rake, through the center of the driving wheel, and from the outer side thereof, substantially as and for the purpose described.

Fifth, I claim communicating motion to the rake shaft from the outer side by means of the plate, W, or its equivalent, and the clutch pin, Y.

Sixth, I claim the combination of the sector plate, Q, hollow spindle, I, and rake shaft, V, substantially as shown and described.

Seventh, The combination and arrangement of the sleeve, C, stationary spindle, f, projecting from one side of said sleeve, and reel pulley, g, substantially as and for the purpose set forth.

59,304.—WATER WHEEL.—J. M. Williams, Connersville, Ind.

First, I claim the water wheel constructed as described, combining the disk, a, and buckets, c, with an annular flange, for a base, in the manner and for the purpose specified.

Second, The combination of the dome chute case, with its chute, d, and gate, g, arranged as described for the purpose specified.

Third, The combination of the wheel with the chute case and gate, arranged and operating conjointly, as and for the purpose specified.

59,305.—FLOOR CLAMP.—Jacob D. Winslow, Wilmington, Del.

I claim the combination of the block, A, composed of wood or other suitable material with or without ears or lugs, d d, with the iron dogs, b b, and the wedge, c, as hereinabove described, or any other appliances substantially the same as and for floor clamp.

59,306.—ARTIFICIAL LEECH.—Frederick Wolff, New York City.

I claim, First, The construction of the mechanical leech with a lancet or puncturing device and with a suction piston in such manner that the lancet can be raised and set independently of the piston, operated to puncture the skin and then both the lancet and piston raised together, so as to draw the blood within the same air pump tube, A, in which the lancet and piston are arranged, all substantially in the manner described.

Second, The elastic cushion, h, in combination with the stop, b, substantially in the manner and for the purpose described.

Third, Extending the lancet handle through the cap, C, and making it capable of being set for use, independently of the piston, substantially in the manner and for the purpose described.

Fourth, The combination of the lancet, hollow piston rod, air pump barrel, A, stop, b, and spring catch, all arranged substantially as described.

59,307.—BURGLAR ALARM.—Henry Yerty, Sidney, Ohio.

I claim one or more barrels mounted upon a pivot or axis and employed in connection with a rod, I, extending forward of the axis, E, and having attached to it one or more cords, I', whereby the barrels are directed toward an approaching object by the object itself and then discharged, substantially as described.

I further claim the combination with the swiveled gun, A A, of the shaft, G, arm, H, rod, I, and cord, I', the whole being arranged to operate in the manner and for the purposes herein described.

59,308.—MACHINE FOR OILING WOOL FOR CARDING ENGINES.—John H. Aiken, Norwalk Conn., assignor to himself and Reuben Rowley, New York City.

First, I claim giving to a perforated oil distributor an abrupt or sudden falling or dropping motion, by means of a cam or equivalent device, for the purpose of sprinkling the oil on the wool as hereinbefore set forth.

Second, I also claim, in combination with an oil distributor having an abrupt or sudden falling or dropping motion, a vibratory oil box, substantially as hereinbefore set forth.

Third, I also claim, in combination with a vibratory oil box, the crank, I, and levers, J and K, or their equivalents, for the purpose set forth.

Fourth, I also claim, in combination with a vibratory oil box, the adjustable shield or case, L, for the purposes substantially as hereinbefore set forth.

59,309.—BALING PRESS.—Heman A. Ashley (assignor to himself and Edward M. Doty), Springfield, Ohio.

I claim the arrangement, herein described, of the base bars, A A, press box, P S (at or near the level of the ground), double follower, K K, cross beams, a a, vertical toggle levers, I J J, cord, M, and pulleys, L j, all constructed and operating as set forth, to provide for the delivery of the bale at or near the ground.

59,310.—PITMAN CONNECTION.—M. L. Ballard (assignor to Ballard, Fast & Co.), Canton, Ohio.

I claim a pitman connection formed by the hemispherical head, B, fitting into a similarly shaped recess, the crown, a, and its opening, c, and the flanged screw bolt, E, or its equivalent, a pin, combined to operate in the manner and for the purpose described.

59,311.—GRATE BAR.—Geo. H. Clarke and Charles Van Wagener (assignor to Geo. H. Clarke), New York City.

We claim, in combination with the arched bar, A, the bars, B and C, provided with vertical dovetails or similar interlockments, the slitted rods dividing the bars to admit of longitudinal expansion, and the grooves or depressions in the supports, a a, the whole constructed substantially as described and for the purposes specified.

59,312.—RENDERING APPARATUS.—Charles J. Everett (assignor to Lockwood & Everett), New York City.

I claim, First, Consuming the noxious or offensive gases and vapors from a rendering tank, apparatus or contrivance, by introducing them in, over or under the furnace, along with an artificial current of air induced by the flow of said steam and gas from the rendering apparatus or superheater.

Second, Uniting or mixing over the furnace of the consumer or deodorizer, an artificial current of air and the heat of the furnace, with the noxious or offensive gases and vapors, from a rendering apparatus, for the purpose of consuming them without materially increasing the consumption of fuel in the furnace.

Third, I claim the use of jets and blow pipes, applied so as to introduce the noxious gases and vapors, along with a current of air, into, over or under the furnace, substantially as shown and described.

Fourth, I claim concentrating the heat with the noxious gases and vapors from a rendering tank, along with the current of air over the furnace, and arresting their too rapid ascent by the use of a receiver, to insure their ignition and consumption, as set forth.

Fifth, I claim the use of the pipe, P, fig. 3, in the tank, substantially in the manner described for the purpose specified.

59,313.—SPRING BAT.—George W. Hill, Deep River, Conn., assignor to himself and C. A. Moore, West Brook.

I claim the ball bats (or clubs) substantially as specified and for the object set forth.

59,314.—COTTON-SEED PLANTER.—W. A. Horreell (assignor to himself and Richard Bruner), Washington, Ind.

I claim the hopper, E, with the narrow bottom grating formed by the rods, d, and the endless belt, e e, with the teeth, m, combined therewith, constructed, arranged and operating together for planting cotton seeds, substantially as herein described.

I claim the adjustable clevis, h, in combination with endless belt, e e, arranged and operating as and for the purpose herein specified.

I claim the combination of the plow, a, the furrow-opening blocks, b, and the furrow cover, e, with the hopper, E, and the endless belt, c e, arranged and operating substantially as herein described.

59,315.—FLOUR SIFTER.—B. Illingworth (assignor to J. P. Byerly and C. A. Sheetz), Freeport, Ill.

I claim the box, A, provided with legs having a horizontal bar, d, with the disks, D and rods, b b, operating upon the semi-circular sieve, G, when arranged in the manner substantially as herein specified.

59,316.—HARNESS.—Amor D. Kendig, Safe Harbor, Pa., assignor to himself and John Miller.

I claim the pulley, A, attached to the bit in combination with the pulley, B, attached to the breeching, and having the line arranged in connection therewith, as shown and described.

59,317.—STILL FOR PETROLEUM.—Allen Lapham, Brooklyn, N. Y., assignor to himself and Job Johnson.

I claim the arrangement of the flues, g and h, and dampers applied to the still, a, substantially as set forth, for preventing the still becoming heated above the liquid therein, for the purposes set forth.

I also claim forming the lower portions of the still over the fire narrower than the upper portion, as shown, and combining therewith the flues, g, as and for the purposes set forth.

59,318.—TELEGRAPH CABLE.—James N. Phelps (assignor to himself and Joseph Bailey), Brooklyn, N. Y. Antedated Oct. 16, 1866.

I claim the employment in a cable of one or more spiral metallic conductors, C, wound around a core of india rubber or elastic insulating material, B, which constitutes a loose insulating covering to a central conductor, A, substantially as herein described.

59,319.—PACKING FOR OIL WELLS.—Owen Redmond (assignor to Rufus F. Osgood), Rochester, N. Y.

I claim a packing device for artesian wells, packing both the tubing and the sides of the well, when the said device is capable either of being adjusted higher or lower upon the tubing, or vice versa, the tubing adjusted higher or lower within the packing, substantially as specified.

I also claim the combination of the hollow wedge, G, and screw collars, D E, for the purpose of expanding the packing disk, b, substantially as described.

I also claim securing the packing device to the oil tube at any position by means of the screw, r, provided with a head or rim around which passes a wire, cord or chain, s, substantially as specified.

59,320.—CURTAIN EYELET.—John Starkey (assignor to Byron D. Verrill), Portland, Me.

I claim the eyelet, E, having shoulder, S, and terminating in oval rim, R, with or without the washer, W, and in combination with the disk, C, all constructed as described and for the purposes set forth.

59,321.—CHERRY STONER.—J. W. Thompson (assignor to himself and H. Barnaby), Salem, Ohio.

I claim, First, The combination of the griping knives, a a a, with the stripper, C, arranged to operate substantially as described.

Second, The rotary plate, D, upon the shaft, D', in combination with the cherry receptacle, B, and a stripper, C, substantially as described.

Third, The construction of the pivoted knives, a, with notches in them for receiving and holding the cherrystone during the stripping of the pulp from it, substantially as described

Fourth, The construction of the stripper, C, of spring segments, adapted for receiving through them the cherrystones and discharging the same at the opposite end of the cylinder to that from which the pulps are discharged, substantially as described.

59,322.—SLAT IRON FOR CARRIAGE TOPS.—George W. Traphagen (assignor to himself and A. M. Decker), Glen's Falls, N. Y.

I claim, First, Attaching the bows to the hinge by screws, substantially in the manner herein shown and described and for the purpose set forth.

Second, The combination of the straps, A, and finger irons, C, within each other, with the bows, B, and with the supporting iron or rail, D, when the said straps and finger irons are constructed substantially as herein shown and described and for the purpose set forth.

59,323.—PHOTOGRAPHIC ALBUM.—Richard Van Velthoven, Philadelphia, Pa., assignor to Wm W. Harding.

I claim forming one or more flaps, b, in the strips, C, in the manner and for the purpose substantially as shown and described.

59,324.—MACHINE FOR PEELING ALMONDS.—Henry Wathew (assignor to Thomas and George M. Mills), Philadelphia, Pa.

I claim the two elastic endless aprons, A A, with their respective rollers and mountings, when constructed substantially as described and for the purposes set forth.

59,325.—CONFECTION PAN.—Henry Wathew (assignor to Thomas and George M. Mills), Philadelphia, Pa.

I claim the pan, A, having the described wabbling motion imparted to it by means or devices equivalent to those herein set forth, and being provided with the described arrangement for heating by steam or hot air, the whole being arranged substantially as and for the purpose specified.

I also claim supporting the weight of pan, A, at or near its center of gravity, upon the annular bearing, L, substantially as and for the purpose set forth.

59,326.—MANUFACTURE OF LIQUID GLUE.—Wm. C. Watson, Paterson, N. J., assignor to himself and Ira W. Gregory, Brooklyn, N. Y.

I claim a liquid glue cement composed of the ingredients and about in the proportions specified.

59,327.—HORSE-SHOE NAIL MACHINE.—H. E. and C. W. Woodford, Keeseville, N. Y., assignors to themselves and P. S. Whitcomb.

I claim, First, The intermittingly rotating anvil provided with dies in connection with the vertical and lateral hammers, and arranged to operate substantially in the manner as and for the purpose herein set forth.

Second, The securing of the dies, G, in or to the periphery of the wheel, F, by means of the dovetail groove in the flange, c, bearing against the opposite ends, substantially as shown and described.

Third, Giving the anvil an intermittingly rotating motion by means of the cam, C, and worm wheel, D, constructed and arranged substantially as set forth.

Fourth, The cutters, K K', in combination with the intermittingly rotating anvil, substantially as and for the purpose specified.

Fifth, The vibrating bed piece, B, provided with the roller, E, in connection with the plate, F, provided with the roller, G, the toothed wheel, C, having a smooth portion, n, on its periphery, and the projection, s, on said wheel, with the pendant, M, of plate, F, all arranged to operate substantially as and for the purpose set forth.

Sixth, The screw, K, and worm wheel, H, in combination with the vibrating bed, B, and the plate, F, substantially as and for the purpose specified.

59,328.—MANUFACTURE OF SULPHUR.—L. A. C. St. Paul de Sincay, La Vieille, Montagne, Belgium.

I claim the within-described method of reducing sulphurous acid gas, consisting of a series of retorts, e, condensers, g, and collecting chambers, h, in combination with the main pipe, a, and secondary pipes, b, substantially as set sorth.

59,329.—LOCOMOTIVE FIRE GRATE.—R. Eaton, Lee, England.

I claim, First, A grate composed of a series of grate bars, A, either square, round, oblong, or polygonal, and placed one above the other in the form of terraces of gradually decreasing size, substantially as and for the purpose described.

Second, The ash pan, D, provided with front guard, G, front damper, F, and back damper, E, in combination with the grate, constructed and operated substantially as and for the purpose set forth.

59,330.—PROCESS FOR MAKING EXTRACTS.—Julius Robert, Leelowitz, Austria.

I claim the within-described process of extracting juice from vegetable substances by subjecting them to "diffusion," substantially in the manner set forth.

59,331.—METHOD OF EXTRACTING FIBER FROM CHINA GRASS, ETC.—James Steart, Bermondsey, England.

I claim the obtaining the fiber from China grass, Rhea, or Siam grass, Spanish grass, weed, flax, and other analogous vegetable substances, and the preparing, cleaning, and purifying of goat, camel, and other hair, silk, wool, and other analogous substances, by subjecting the same to the process above described.

59,332.—CLASP FOR BELTING, ETC.—George Frederick White, Hornsey, England, and Harvey Chamberlain, London, England.

We claim the apparatus constructed and operated substantially as herein described and represented in the drawings, when applied to the elongation and contraction of articles in the manner and substantially as specified.

59,333.—CONSTRUCTION OF GLASS BOTTLES.—Franklin N. Bullard, Worcester, Mass.

I claim the construction or making of glass or other bottles of a triangular form, and of such relative greater and lesser angles as that two, four, eight, or multiples of these numbers will pack up in a square form for economy, facility, and security in packing and transporting them, substantially as described.

59,334.—APPARATUS FOB DISTILLING PETROLEUM. John F. Collins, New York City.

First, I claim so constructing the mouth, a, of the still, and combining it with the gooseneck, C, or exit pipe as to provide for the admission of air around the mouth, substantially as herein set forth for the purpose specified.

Second, The construction of the gooseneck, C, or exit pipe, with the collecting channel, d, substantially as herein set forth for the purpose specified.

Third, The conducting tube, f, combined in relation with the collecting channel, d, and the exit pipe, e, of the gooseneck, substantially as herein set forth for the purpose specified.

© 1866 SCIENTIFIC AMERICAN, INC.

REISSUES.

2,385.—APPARATUS FOR RENDERING LARD, TALLOW, ETC.—Radcliffe B. Lockwood and C. J. Everett, New York City, assignees of Carrol E. Gray. Patented Jan. 31, 1865. Reissued Aug. 8, 1865.

We claim, First, Making a close water jacket in combination with the tank, and a part of it, and arranging said water jacket so made a part of said sank in direct communication with the furnace, so that the water jacket shall intervene between the fire and the tank, and act as a means of conducting and distributing the heat from the fire to and around the substance cantained in the tank.

Second, Using the steam generated in a close tank from the constitutional water in the fat for the purpose of aiding and controlling the escape of the noxious gases and vapors either to a superheater for consumption in the furnace, or to a deodorizer for the purpose of deodorizing them, in the manner substantially as described for the purpose specified.

Third, Controlling and superheating the noxious gases and vapors as they escape from a rendering apparatus by passing them through a pipe or flue leading from said apparatus to a superheater, preparatory to their consumption.

Fourth, Controlling the escape of the noxious gases and vapors from a rendering apparatus by passing them through a pipe or flue into a surface condenser, for the purpose of condensing the vapor and absorbing in the water of condensation the noxious gases or as much of them as may be possible, substantially as shown and described.

Fifth, Deodorizing the water of condensation holding said noxious gases in solution by passing it through a deodorizer after it leaves the condenser, substantially as described.

2,386.—BOTTLE STOPPER.—John Matthews, New York City, assignee of Albert Albertson. Patented Aug. 26, 1862.

First, I claim a stopper which is inserted through the mouth of a bottle or other vessel and which when inserted is closed perfectly tight against a seat formed within the bottle itself by pressure in an upward direction.

Second, A prolongation of such stopper by means of a central stem, rod or other extension of the stopper in an outward direction beyond the seat of the valve for the purpose of affording facility for opening the stopper or that of receiving the upward pressure of a spring or other means of drawing the valve to its seat, substantially as herein specified.

Third, The two disks, B C, of unequal size and the interposed flexible disk or diaphragm, D, in combination with each other and with a stem or standard, A, substantially as herein specified.

DESIGNS.

2,497.—MILITARY MONUMENT.—J. S. Armstrong, Prarie du Chien, Wis.

2,498.—PAPER COLLAR.—J A. Charnley, Providence, R. I.

2,499 and 2,500.—COACH LAMP.—A. P. De Voursney, New York City. Two patents.

2,501.—TRADE MARK.—William Freudeman, St. Louis, Mo.

2,502.—CLOCK CASE.—Nicholas Muller, New York City.

CHARLES A. SEELY, CONSULTING AND Analytical Chemist, No. 26 Pine street, New York. Assays and Analyses of all kinds. Advice, Instruction, Reports, etc., on the useful arts. 22

INCRUSTATIONS in Steam Boilers prevented by Winans's anti-Incrustation Powder, 11 Wall-st,. N. Y. 20 6*

WANTED—A Machine for cutting off iron bars ½-in. square, to be operated by Power. Address, with price and description, J. W. ROCKWELL, Ridgefield, Conn. 1*

NOTICE TO CAPITALISTS! FOR SALE—The entire Patent, or half interest if desired, of a very valuable and useful invention. For particulars address 20] Inventor, J., Hillsboro, Ills.

STEAM HAMMER WANTED— A good Second-hand one, suitable for a Stationary-engine Shop. Parties having such for sale will address, with full description, Box 176, Post-office, New London, Conn.

HARNESS MAKERS AND SADDLERS, send me your address for descriptive circular, showing what I can do for you in the way of an improved Stitching Horse. 20 5* eow] GEO. F. BROCKWAY, Warsaw, Kosciusko Co., Ind.

WANTED—Agricultural Implement Makers to make the only Cotton Planter that does the work of four hands, and sells at $25. Apply to A. PACKHAM, 20 2] Prestonsville, Carroll county, Ky.

PATENTS.—Valuable American and English Patents Manufactured and Sold, for cash, on Commission. Consignments Respectfully Solicited. Address KENYON & CO., 151 Broadway, New York. References:—Jacob Miller, Director Citizens' Bank, N. Y.; H. M. Hall, President Oriental Bank, N. Y.

PATENT PAGING AND NUMBERING MACHINES—For Paging Blank and Copying Books, and Numbering Checks, Bonds, Coupons, Railroad Tickets, etc., manufactured and for sale by JOHN R. HOOLE, 20] 124 Nassau street, New York.

WANTED— A Mechanical Draftsman, who has a good idea of "Proportion," and strength of Wood and Iron Material. Apply to FOWLE & CO., 20] 70 Broadway, New York.

FOR SALE— The Right to Manufacture the Dougherty Barrel-head turner and Heading and Shingle-sawing Machine, either for the United States or separate States. The best of references given by those using the same. Apply to 20 2*] JOHN B. DOUGHERTY, Rochester, N. Y.

THE BEST POWER HAMMER MADE IS the Dead Stroke Hammer of Shaw & Justice. Sizes suited for manufacturing awl blades or engine shafts; consume but little space, and require but little power. Manufactured by PHILIP S. JUSTICE, 14 North 5th street, Phila., and 42 Cliff-st., New York. Shops 17th and Coates-sts., Philadelphia. 20

CAST-IRON FIREBOXES FOR STEAM Boilers can be added to any kind of Boiler. "The boxes are of great value—durable, safe, and effectual—they far surpass our expectations in economy in generating steam. According to our experience, we cannot recommend them too highly."—RICHARD PARTINGTON, Supt. Providence Dyeing, Blg., and Cal. Co. JOSEPH A. MILLER, 1*] 48 Pine-st., New York, Manufacturer.

FOR TWIST DRILLS—Best in use—address AMERICAN TWIST DRILL CO., Lowell, Mass. 19 2

WANTED— A good Mechanic, or an Association of good, practical men, to engage in manufacturing machinery and brass work. Room, with office, power, and most of the lathes and tools to commence with furnished. All would be rented, and orders given for a large portion of the product of the shop, which is 43 by 140 feet. Address H. J. B., Box 1,785, Buffalo, N. Y.

JENKINS'S PATENT COMPRESSION GLOBE VALVE, For Steam, Oil, Water, etc. The bottom of the Valve is provided with an improved, durable, slightly elastic, rubber disk, easily renewed, making the valve perfectly tight, and prevents wear of the valve seat. No grinding. No wearing out. Warranted as represented, or the money returned. 20 10*] NATHANIEL JENKINS, 12 Hawkins-st., Boston, Mass.

RICHARDSON, MERIAM & CO., Manufacturers and Dealers in DANIELS'S AND WOODWORTH PLANERS, Boring, Matching, Molding, Mortising, and Tenoning Machines. Scroll, Cut-off, and Slitting Saws, Saw Mills, Saw Arbors, Spoke and Wood-turning Lathes, and other Wood-working Machinery. Warehouse, 107 Liberty street, New York. Manufactory, Worcester, Mass. 20 tf

SHAW & JUSTICE'S POWER HAMMER IS Moderate in Price, is driven with one-tenth the power used by other Hammers, and will not cost the one-hundredth part of what is usually spent in repairs. Its power is far in excess of any Hammer known. Manufactured by PHILIP S. JUSTICE, 14 North 5th street, Phila., and 42 Cliff-st., New York. Shops 17th and Coates-sts., Philadelphia. 20

CIRCULAR SAWS— WITH EMERSON'S PATENT MOVABLE TEETH, Cut more and better lumber in the same time, and with the same power, than any other saw in the world, with less expenditure of labor and files to keep in order, and never wear smaller. Also, Emerson's Patent Gaging and Sharpening Swage, for spreading the points of saw teeth. Send for descriptive pamphlet, with new price list. AMERICAN SAW COMPANY, 20 3*] 2 Jacob street, near Ferry street, New York.

COLLINS IRON CO., Manufacturers of Charcoal Pig Iron, at Marquette, Mich. Numbers one and two are a soft "Gray Iron," strong in the Pig, and when "puddled" for Boiler Plate, Sheet Iron, or Merchant Bar, is equal to Swedes, Russia, or Norway Irons. Number Three, a fine, close-grain Iron, particularly adapted for "Malleable Castings." Numbers four and five, "Mottled" and "White," when mixed with the "Gray Iron," make superior Car Wheels. Yard, foot of Adams-st., Brooklyn. Office, 48 Pine-st., New York. 20 4*] C. A. TROWBRIDGE, Sec'y and General Agt.

SPLENDID PRIZES Are offered for procuring Subscribers to OUR YOUNG FOLKS.

The best Juvenile Magazine in the World. The Publishers wish every Boy and Girl in the country to have this Magazine, for which the best writers of the country are regularly engaged. Send 20 cents for specimen copy with list of Prizes. Terms: $2 00 a year; 10 copies, $15 00.

EVERY SATURDAY! Has the best and freshest selections from the most popular Foreign Periodicals, including frequently articles by Henry Kingsley, Edmund Yates, Alexander Smith, Miss Rossetti, Matthew Arnold, Robert Buchanan, Frances Power Cobbe, Edmond About, Alexandre Dumas, Anthony Trollope, Jean Ingelow, and other eminent writers. Terms: Single Number, 10 cents. Yearly Subscription, $5 00. 20 1] TICKNOR & FIELDS, Publishers, Boston.

NICKSON'S PATENT CARRIAGE TOP PROtector, formed of an oval block, spiral springs, and plate. This invention supplies the place of the old fashioned prop block. By applying it to carriage or buggy top will prevent the cloth or leather from wearing through when let down. P. S.—To be finished with leather or any suitable material. Patented through the SCIENTIFIC AMERICAN Oct. 23, 1866. County and State rights for sale. Address 20 1* R. NICKSON, Akron, Ohio.

OILERS.—Olmsted's Improved Spring Top. The spring cannot be set or injured by pressing upon it to expel the oil. Warranted the most substantial oiler in the market. Price for No. 1, Machinist's size, $3 60 per dozen. The trade generally is supplied. Send for Circular. Address L. H. OLMSTED, Stamford, Conn. 20 2*

ANDERSON & STONE, Model Makers, 209 Center street, New York. 19 4*

$150 A MONTH; NEW BUSINESS FOR Agents. H. B. SHAW, Alfred, Me. [11 13*

WHEELER & WILSON, 625 BROADWAY, N. Y.—Lock-stitch Sewing Machine and Buttonhole do. 1t

PARTIES Desirous of Manufacturing the Best Locks made are requested to address S. JOHNSON, at New Harmony, Ind. Patent ordered to issue. 19 2*

BALING PRESS FOR COTTON, etc., just patented. Address C. C. CONVERSE, Inventor, 18 4*] 116 Wall street, New York, for information.

MACKENZIE CUPOLA FOR SALE, SIZE No. 4—25 feet—entirely new. Apply to 18 3*] BROWN, SEIBERLING & CO., Massillon, O.

J. DONALDSON'S SELF-FEEDING, DISCharging, and Separating Hominy Mills. For Mills, Territory, or Circular with full description of Mills, address 17 6*] J. DONALDSON & CO., Rockford, Ill.

A SUPERIOR NUMBER.—THE PHRENOLOGICAL JOURNAL for November contains sketches of the King and Queen of the Belgians, with likenesses; Chief Men among the Mormons, with many excellent portraits, and other illustrations; besides Lyceum Lectures; Dr. J. Fossati, the celebrated French Phrenologist; Public Opinion; Women who Talk; Family Dog; and a host of other reading, suggestive and profitable to all. Price 20 cents, or $2 a year. Address FOWLER & WELLS, 389 Broadway, New York. 19 2

BALLOU'S MONTHLY MAGAZINE FOR 1867. NOW IS THE TIME TO GET UP CLUBS.

THE MAGAZINE for 1867 will appear in an entire New Dress, with the addition of several new and attractive features. It will be printed on much heavier and finer paper, and be more than ever worthy the patronage of an intelligent public. Terms:—$1 50 a year; seven copies, $9 00; twelve copies, 15,00; and a copy gratis one year to the person sending a club of twelve. Single copies, 15 cents. Send two-cent stamp for a specimen copy. The Cheapest Magazine in the World. Address 19 2*] ELLIOTT, THOMES, & TALBOT, Boston, Mass.

$1,500 PER YEAR, PAID BY SHAW & CLARK, Biddeford, Me., or Chicago, Ill. [11 13*

GOFF'S COMBINED CULTIVATOR AND Seed Coverer. Patent for sale. Address 19 4*] S. M. GOFF, E. Addison, Addison county, Vt.

WANTED—2 FIRST-CLASS TIN PLATE and Sheet Iron Workers, accustomed to all kinds of Job Work. Address ARTHUR C. PORTER, 19 2] 35 Woodward Ave., Detroit, Mich.

DR. SAMUEL B. SMITH'S

Magnetic Machines

FOR MEDICAL PURPOSES.....Price $18 00.

Smith's Apparatus gives a much stronger physiological effect than I have seen from any other.—B. Silliman, Jr., Yale College. Your machines have a stronger Galvanic power than any other I have used yet.—Dr. Thomas Allen, Philadelphia, Pa. DR. S. B. SMITH, 209 Broadway, New York.

BOILER FELTING For Sale by GEO. D. PUTNAM, Agent of Lowell Felting Mills, No. 19 Lindall street, Boston, Mass. 19 2

IMPORTANT TO MANUFACTURERS USING STEAM FOR POWER. KELLEY & LAMB'S Improved Steam Engine Governor, the only Governor that will give the same speed, with high or low pressure of steam or the Engine being light or heavy loaded—is considered by those who have used it to have no equal, and is warranted to give satisfaction. Send for Circular. LAMB, COOK & CO. Proprietors 20 6* Slatersville, R. I.

ERICSSON CALORIC ENGINES OF GREATLY IMPROVED CONSTRUCTION.—Ten years of practical working by the thousands of these engines in use, have demonstrated beyond cavil their superiority where less than ten horse-power is required. Portable and Stationary Steam Engines, Grist and Saw Mills, Cotton Gins' Air Pumps, Shafting, Pulleys, Gearing Pumps, and General Jobbing. Orders promptly filled for any kind of Machinery. JAMES A. ROBINSON, 164 Duane street, cor Hudson, New York. 1 tt

KEEN BROTHERS—Manufacturers of Steam Vacuum and Water Gages, Marine Clocks, Registers, and all kinds of Brass work. All kinds of Gages repaired promptly. Model and Pattern Making. Supplies bought on Commission. Send for Circular. KEEN BROTHERS, 218 Fulton street, up stairs. REFERENCES:—U. S. Local Inspectors, N. Y. and Phila.; City Inspector, Metropolitan Police Headquarters. 18 4*

LATHES, PLANERS, AND OTHER TOOLS, on hand and to order, from Lowell Machine Shop. STEVENSON & PEIRSON, 19 2*] 48 Kilby street, Boston.

TO RAILROAD AND TELEGRAPH COMPANIES.—Telegraph Circuit Breaker and Signal Apparatus, Is readily used by Conductors and Brakemen, and all hindrances to trains on the road immediately telegraphed to dispatcher's office. Also, of great value in testing wires out upon the line. Address [19 8*] ALONZO CHACE, Syracuse, N. Y.

GOULD MACHINE COMPANY, Of Newark, N. J., and 102 Liberty street, New York. IRON AND WOOD-WORKING MACHINERY, STEAM ENGINES, BOILERS, SAW MILLS, ETC. 19 tt

GAS CASTINGS FOR SALE.— THE GAS-LIGHT COMPANY of Springfield, Ill., offer for sale the following described castings, etc., which have been replaced in the enlargement of their Works. They are adapted for a gas works of a town of ten thousand inhabitants, and will be sold at 3½ cents per pound, delivered on the cars in Springfield.

4	Purifiers and Covers	4,880 lb
1	Box Washer (round)	3,000 "
5	Condensing Boxes	1,650 "
4	Bridges to do.	640 "
24	Retort Mouthpieces (narrow)	4,800 "
2	Hydraulic Mains, T	400 "
1	Bottom to Hydraulic Seal	500 "
6	Hub Flange Bends, 6-in	900 "
	Sundry Castings	3,000 "

Also, 1 6-in. Cup Valve; 1 4-in. Sluice do. Address 19 4] GAS LIGHT CO., Springfield, Ill.

COPPER DISTILLERY WORKS AND MANufactory of Brass Cocks, Valves, etc. Copper Stills, Worms, and brass work for do. constantly on hand. Orders for the same respectfully solicited. Also, for Repairs, either in this vicinity or from a distance, and executed with dispatch. Manufactories and Machine Shops, etc., supplied with Brass and Copper Work and Castings of every description. PETER W. NEEFUS, 1*] Agent, 231 West street, New York.

THE HARRISON BOILER—A SAFE STEAM BOILER.—This new Steam Generator combines essential advantages in Absolute Safety from explosion, in first cost and cost of repairs, durability, economy of fuel, facility of cleaning, and transportation, not possessed by any other boiler.

It is formed of a combination of cast-iron hollow spheres—each 8 inches in external diameter, and ⅜ths of an inch thick, connected by curved necks. These spheres are held together by wrought iron bolts with caps at the ends. The form is the strongest known. Its strength to resist internal pressure is very great—unweakened as it is by punching or riveting, which lessens the strength of the wrought iron boiler plate about forty per cent. Every boiler is tested by hydraulic pressure at 400 pounds to the square inch. It cannot be burst under any practicable steam pressure.

Under pressure which might cause rupture in ordinary boilers every joint in this becomes a safety valve. No other steam generator possesses this property of relief under extreme pressure without injury to itself, and thus preventing disaster.

It is not affected by corrosion, which soon destroys the wrought iron boiler. Most explosions occur from this cause. It has economy in fuel equal to the best boilers, arising from the large extent and nearness to the fire of its heating surface, as also from the waved line of this surface which, thoroughly mixing the gases, induces better combustion, and breaking the flame, causes the heat to be more effectually absorbed than in the ordinary tubular or cylinder boiler.

It gets up steam quickly, and with little fuel. It produces superheated steam without separate apparatus, and is not liable to priming or foaming.

It is easily transported, and may be taken apart so that no piece need weigh more than eighty pounds. In difficult places of access, the largest boiler may be put through an opening one foot square. It is readily cleaned inside and out. Under ordinary circumstances, it is kept free from permanent deposit by blowing the water entirely out, under full pressure once a week. It requires no special skill in its management. Injured parts can be renewed with great facility, as they are uniform in shape and size. When renewed the entire boiler remains as good as new. The greater part of the boiler will never need renewal unless unfairly used.

A boiler can be increased to any extent by simply adding to its width, and being the multiplication of a single form, its strength remains the same for all sizes. It has less weight, and takes less than one-half the ground area of the ordinary cylinder boiler, without being increased in hight.

Any kind of fuel may be used under this boiler, from the most expensive to refuse coal dust.

Drawings and Specifications free of charge. For descriptive circulars or price address JOSEPH HARRISON, JR., Harrison Boiler Works, Gray's Ferry Road, 20 9* Adjoining U. S. Arsenal, Philadelphia.

© 1866 SCIENTIFIC AMERICAN, INC.

TO PATENTEES.—
Cast-Steel Name Punches, Letter and Figure Punches, Dies for Labels, Brands and Marking Plates, cut to order.
20] J. R. HOOLE, 124 Nassau-st., New York.

ATMOSPHERIC TRIP HAMMERS ARE made by CHAS. MERRILL & SONS, 556 Grand street, New York. They will do more and better work, with less power and repairs, than any other Hammer. Illustrated circulars, giving full particulars, sent on application. tf 9

R. BALL & CO.,
SCHOOL STREET, WORCESTER, MASS.,
Manufacturers of Woodworth's, Daniell's, and Gray & Wood's Planers, Sash Molding, Tenoning, Mortising, Upright and Vertical Shaping, Boring Machines, Scroll Saws, and a variety of other Machines and articles for working wood.
Send for our Illustrated Catalogue. 1 51*

PORTABLE STEAM ENGINES, COMBINING The maximum of efficiency, durability, and economy with the minimum of weight and price. They are widely and favorably known, more than 300 being in use. All warranted satisfactory or no sale. Descriptive circulars sent on application. Address J. C. HOADLEY & Co., Lawrence, Mass. 1 tf

TURBINE WATER WHEELS!
REYNOLDS'S PATENT SWEEPS THE FIELD!
New Improvements; Low Prices; Does not Clog; Has no Complications of Gates or Costly Flume Works; Compact for Shipment; Great Water Saver.
THE ONLY WHEEL THAT EXCELS OVERSHOTS!
Gold Medal awarded by American Institute for Superiority. Shafting and Geering furnished when required.
GEORGE TALLCOT, Late TALLCOT & UNDERHILL,
15 13* H.] No. 96 Liberty street, N. Y.

TAYLOR, BROTHERS & CO.'S BEST YORKSHIRE IRON.—This Iron is of a Superior Quality for locomotive and gun parts, cotton and other machinery, and is capable of receiving the highest finish. A good assortment of bars in stock and for sale by JOHN B. TAFT, sole agent for the United States and Canadas. No. 18 Batterymarch-st., Boston. 13 54—R.

WROUGHT IRON WELDED TUBE OF ALL sizes; Upright Drill Presses; Peace's Improved Gas Pipe Screwing Machines, and all other Tools used by Steam and Gas Fitters. Also, Brass Work and Fittings manufactured and for sale by CAMDEN TUBE WORKS,
Second and Stevens-sts., Camden, N. J.
☞ Please send for illustrated catalogue. 13 12*

MACHINES FOR SALE CHEAP.—Milling Machins; Edging Machines, large size, but litttle used, and good as new. Built by Snow & Brooks, Meriden, Conn. Address
15 6*] P. HAYDEN & SON, Newark, N. J.

GROVER & BAKER'S HIGHEST PREMIUM ELASTIC Stitch Sewing Machines, 495 Broadway, N. Y. 1 tf

FOR ENGINE BUILDERS' AND STEAM Fitters' Brass Work, address
8 26*] F. LUNKENHEIMER, Cincinnati Brass Works.

IF YOU WANT ONE of the Latest Improved THOMAS'S PATENT ENGINE LATHES,
Send for circular to Thomas Iron Works, Worcester, Mass. 17 8*

FOR WOODWORTH PATENT PLANING AND MATCHING MACHINES, Patent Siding and Resawing Machine, address J. A. FAY & Co., Cincinnati, O. 3 1y

VAN DE WATER CELEBRATED WATER Wheel for sale at the Eagle Iron Works, Buffalo, N. Y.
15 8*] DUNBAR & HOWELL.

J. A. FAY & CO.,
CINCINNATI, OHIO,
Patentees and Manufacturers of all kinds of
PATENT WOOD-WORKING MACHINERY
of the latest and most approved description
Particularly designed for
Navy Yards, Ship Yards, Railroad, Car and Agricu ural Shops, Mills, Etc.
Sash, Blind and Door, Wheel, Felly and Spoke, Stave and Barrel, Shingle and Lath, Planing and Resawing
Warranted superior to any in use. Send for Circulars.
For further particulars address J. A. FAY & Co.,
Corner John and Front streets, Cincinnati, Ohio,
Who are the only manufacturers of J. A. Fay & Co.'s Patent Wood-working Machinery in the United States. 5 1y

IMPORTANT TO MANUFACTURERS AND Inventors.—SMITH & GARVIN, No. 3 Hague street, New York, Machinists and Model Makers, are now ready to make proposals for building all kinds of Light Machinery, Manufacturers' Tools, Models, etc. Satisfactory reference given. 7 28*

PATENT POWER AND FOOT-PUNCHING PRESSES, the best in market, manufactured by N. C. STILES & CO., West Meriden, Conn. Cutting and Stamping Dies made to order. Send for Circulars. [10 tf

THE STEAM SIPHON PUMP IS THE MOST simple, direct, and effective device for raising water by steam yet discovered. It is an independent lift and force pump, without piston, plunger, valves, or any movable part. It cannot get out of order, or freeze up, and can be used wherever there is a steam boiler, either with high or low pressure. It is an efficient fire engine, and the best bilge pump known. Address
STEAM SIPHON COMPANY,
9 13* 48 Dey street, New York.

THE MECHANICS' AND AGRICULTURAL
FAIR ASSOCIATION OF LOUISIANA.

At a special meeting of the Board of Directors, held at Mechanics' Institute, on the 12th inst., it was unanimously resolved that the FIRST GRAND FAIR of this Association shall take place on the FAIR GROUNDS, City of New Orleans, commencing on the 20th of November ensuing.
Inventors, Manufacturers, Agriculturists, Stock Raisers, and others, from any portion of the United States, desirous of being represented in this Industrial Exhibition, can obtain full information by addressing the officers of the Association.
I. N. MARKS, President.
LUTHER HOMES, Sec. and Treas.
C. H. SLOCOMB,
17 5] Chairman of Committee on Fair Grounds.

PRESSURE BLOWERS.
PRESSURE BLOWERS—FOR CUPOLA FURnaces, Forges, and all kinds of Iron Works. The blast from this blower is four times as strong as that of ordinary fan blowers, and fully equal in strength to piston blowers, when applied to furnaces for melting iron. They make no noise and possess very great durability, and are made to run more economically than any other blowing machine. Every blower warranted to give entire satisfaction. Ten sizes, the largest being sufficient to melt sixteen tuns of pig iron in two hours. Price varying from $40 to $345.
FAN BLOWERS, from No. 1 to No. 45, for Steamships, Iron Mills, Ventilation, etc., manufactured by B. F. STURTEVANT,
2 tf] No. 72 Sudbury street, Boston, Mass.

ANDREWS'S PATENT PUMPS, ENGINES etc.—
CENTRIFUGAL PUMPS, from 90 Gals. to 40,000 Gals. per minute, capacity.
OSCILLATING ENGINES (Double and Single), from 2 to 250 horse-power.
TUBULAR BOILERS, from 2 to 50 horse-power, consume all smoke.
STEAM HOISTERS, to raise from ¼ to 6 tuns.
PORTABLE ENGINES, 2 to 20 horse-power.
These machines are all first-class, and are unsurpassed for compactness, simplicity, durability, and economy of working. For descriptive pamphlets and price list address the manufacturers,
W. D. ANDREWS & BRO.,
8 tf No. 414 Water street N. Y

IRON PLANERS, ENGINE LATHES, DRILLS, and other Machinists' Tools, of Superior Quality, on hand and finishing. For Sale Low. For Description and Price, address
2tf] NEW HAVEN MANUFACTURING CO., New Haven, Ct.

"POWER-LOOM WIRE CLOTHS" AND nettings, of all widths, grades, and meshes, and of the most superior quality, made by the CLINTON WIRE CLOTH COMPANY, Clinton, Mass. 1 36*

MODELS, PATTERNS, EXPERIMENTAL and other Machinery, Models for the Patent Office, built to order by HOLSKE & KNEELAND, Nos. 528, 530, and 532 Water street, near Jefferson. Refer to SCIENTIFIC AMERICAN Office. 1 tf

OXY-HYDROGEN STEREOPTICONS,
OXY-CALCIUM STEREOPTICONS,
DISSOLVING LANTERNS,
MAGIC LANTERNS, Etc., Etc.
A Large Assortment of American, European, and Foreign Photograph Views for the same!! A Priced and Illustrated Catalogue, containing 15 Cuts and 56 pages, will be sent free by Mail on application.
WILLIAM V. McALLISTER,
21 52* 728 Chestnut street, Philadelphia.

10,000 AGENTS WANTED, IN EVERY TOWN, COUNTY, and STATE, to sell Topliff's Patent Perpetual Lamp Wick. Needs no Trimming. Sample sent for 20c; two for 30c. State and County Rights for Sale.
MURPHY & COLE,
3 tf] 81 Newark Avenue, Jersey City, N. J.

WOODWORTH PLANERS, BARLETT'S Patent Power Mortise Machine, the best in market. Woodworking Machinery, all of the most approved styles and workmanship. No. 24 and 26 Central, corner Union street, Worcester, Mass. [17 11*] WITHERBY, RUGG & RICHARDSON.

MILL-STONE DRESSING DIAMONDS SET in Patent Protector and Guide. Sold by JOHN DICKINSON, Patentee and Sole Manufacturer, and Importer of Diamonds, for all mechanical purposes; also, Manufacturer of Glaziers' Diamonds, No. 64 Nassau street, New York City. Old diamonds reset. N. B.—Send postage stamp for descriptive circular of the Dresser. 18 3*

STEAM ENGINES WITH LINK MOTION, Variable Automatic Cut-off, of the most approved construction; Mill Gearing, Shafting, Hanger, etc. Address
9 15*] M. & T. SAULT, New Haven, Conn.

LENOIR PATENT GAS ENGINES—Without Boiler, Fire, Coals, or Smoke, for hoisting, grinding, sawing, pumping, and all small industries. In use five years in Paris and in London. In operation daily at HAGAN'S Hoist Wheel establishment, No. 107 Laurens street, near Prince street, New York. Manufactured at the LENOIR GAS ENGINE WORKS, No. 435 East Tenth street, near Avenue D, New York. 15 10

BULLARD & PARSONS, HARTFORD, CONN., are prepared to furnish Shafting of any size and length, in large or small quantities. Our hangers are adjustable in every point, and fitted with Patent Self-oiling Boxes, guaranteed to run six months without re-oiling, and save 80 per cent of oil. By making a speciality of shafting, we are able to furnish very superior work at reasonable rates. Heavy work built to order. 15 tf

BROUGHTON'S STANDARD OILERS!—Ask for Broughton's! They are the only really first-class Oilers in the market, and will outwear from six to twelve of any ordinary oilers. To be had at all first-class Hardware stores. Send for catalogues.
17 4*] BROUGHTON & MOORE, 41 Center st.

PATENT SHINGLE, STAVE, AND BARREL Machinery, Comprising Shingle Mills, Heading Mills, Stave Cutters, Stave Jointers, Shingle and Heading Jointers, Heading Rounders and Planers, Equalizing and Cut-off Saws. Send for Illustrated List. FULLER & FORD,
17 4*—tf—C.] 282 and 284 Madison street, Chicago, Ill.

OIL! OIL!! OIL!!!
For Railroads, Steamers, and for machinery and Burning, PEASE'S Improved Engine Signal, and Car Oils, indorsed and recommended by the highest authority in the United States and Europe. This Oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior to and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The "Scientific American", after several tests, pronounces it "superior to any other they have used for machinery." For sale only by the Inventor and Manufacturer, F. S. PEASE, No 61 and 63 Main street, Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the world. 2tf

FOR SALE—One New Boring Mill, Swing 9 ft. 2 in. Will do all work required of it for building Engines, etc., Also, very useful for Pulleys. Built from Patterns at Niles's Works, with latest improvements. Address
19 12*] C. KRATZ, Evansville, Ind.

STEAM BOILER EXPLOSIONS PREVENTED by use of Ashcroft's Low Water Detector. Over 5,000 in use. Send for Circular. JOHN ASHCROFT, 50 John st., N. Y. 19 12*

TO ENGINE BUILDERS.—
Ross's Celebrated Patent Oil Cups for Cylinders or Engines, Brass and Iron body, Globe and Check Valves, Gage Cocks, Whistles, etc., on hand and made to order. Price list sent on application. B. E. LEHMAN,
19 tf] Lehigh Valley Brass Works, Bethlehem, Pa.

MOLDING CUTTERS MADE TO ORDER.—
Send for circular to WM. H. BROWN,
17 8* eow] 44 Exchange-st., cor. Union, Worcester, Mass.

CLOCKS FOR TOWERS, OFFICES, ETC., also Glass Dials for illuminating. Address
7 13* eow] JOHN SHERRY, Oakland Works, Sag Harbor, N. Y.

ALCOTT'S CONCENTRIC LATHES.—FOR Broom, Hoe, and Rake Handles, Chair Rounds, &c., and all other kinds of Wood-working Machinery, for sale by S. C. HILLS, 13 Platt street, New York. b

FOR PATENT STAVE AND BARREL MAchinery, Shingle Machines, Etc., address J. A. FAY & CO., Cincinnati, Ohio.
4btf

MASON'S PATENT FRICTION CLUTCHES, for starting Machinery, especially Heavy Machinery, without sudden shock or jar, are manufactured by
6 20] VOLNEY W. MASON, Providence, R. I.

WOOD & MANN STEAM ENGINE CO.'S CELEBRATED PORTABLE STEAM ENGINES, from 4 to 35 horse-power. Also, PORTABLE SAW MILLS.
We have the oldest, largest, and most complete works in the United States, devoted exclusively to the manufacture of Portable Engines and Saw Mills, which, for simplicity, compactness, power, and economy of fuel, are conceded by experts to be superior to any ever offered to the public.
The great amount of boiler room, fire surface, and cylinder area, which we give to the rated horse-power, make our Engines the most powerful and cheapest in use; and they are adapted to every purpose where power is required.
All sizes constantly on hand, or furnished on short notice. Descriptive circulars, with price list, sent on application.
WOOD & MANN STEAM ENGINE CO.
52* Utica, N. Y. Branch office 96 Maiden Lane N. Y. City.

$200 per MONTH is MADE by AGENTS selling the Parker Sewing Machine—the most perfect in existence. Parker Sewing Machine Company, Cincinnati, Ohio. 8 13

FOR DANIELLS'S PLANING MACHINES, Car Mortising, Boring Machines, Car Tenoning Machines, Car Planing and Beading Machines, etc., address
4 1y] J. A. FAY & CO., Cincinnati, Ohio.

BUERK'S WATCHMAN'S TIME DETECTOR. —Important for all large Corporations and Manufacturing concerns—capable of controlling with the utmost accuracy the motion of a watchman or patrolman, as the same reaches different stations of his beat. Send for a Circular. J. E. BUERK,
P. O. Box 1,057, Boston, Mass.
N. B.—This detector is covered by two U. S. patents. Parties using or selling these instruments without authority from me will be dealt with according to law. [13 28*

SMALL MACHINE SHOP FOR SALE—Location near Depot and Steamboat Landing. Enquire at Ward's Hospital, foot of Center-st., Newark, N. J. 18 3.

TO BUILDERS.—
Patent Rolled Plate Glass for Skylights for sale very low by
E. & H. T. ANTHONY & CO.,
501 Broadway,
13 13*] Agents of Southbridge Glass Works.

GODDARD'S BURRING MACHINE WORKS
Office, No. 3 Bowling Green, New York,
manufacture the
Patent Steel Ring and Solid Packing
BURRING MACHINES,
Patent Mestizo Wool-burring Pickers, Shake Willows, Wool and Waste Dusters, Gessner's Patent Gigs, Etc.
Orders respectfully solicited, and prompt attention given, by addressing C. L. GODDARD,
1 tf No. 3 Bowling Green, N. Y.

PATENTEES TAKE NOTICE.—
Having made large additions to our Works, we can add one or two machines to our list of manufactures. The machines must be strictly first-class, and well protected. BLYMYER, BATES & DAY Manufacturers of Agricultural Machinery, Mansfield, O. 15 tf

DROP, FOOT, HAND, AND JEWELER'S Presses, Lathes, Shapers, and other Machinery. Also, one medium sized Second-hand McKenzie's Blower, at Newark Manufacturer's Depot, O. BARNETT, Supt., 85 Center st., N. Y. 18 4*

PORTABLE AND STATIONARY STEAM Engines and Boilers, Circular Saw Mills, Mill Work, Cotton Gins and Cotton Gin Materials, manufactured by the ALBERTSON & DOUGLASS MACHINE CO., New London, Conn. 18 18*

IMPORTANT.
MOST VALUABLE MACHINE for all kinds of irregular and straight work in wood, called the Variety Molding and Planing Machine, indispensable to competition in all branches of wood-working. Our improved guards make it safe to operate. Combination collars for cutters, saving 100 per cent, and feed table and connection, for waved moldings and planing, place it above all others. Evidence of the superiority of these machines is the large numbers we sell, in the different states, and parties, laying aside others and purchasing ours, for cutting and shaping irregular forms, sash work, etc.
We hear there are manufacturers infringing on some one or more of our nine patents in this machine. We caution the public from purchasing such.
All communications must be addressed "Combination Molding and Planing Machine Company, cor. 1st ave. and 24th-st., New York, where all our machines are manufactured, tested before delivery, and warranted.
Send for descriptive pamphlet. Agents solicited. 19 tf

THOMAS BARRACLOUGH & CO.,
MANCHESTER, ENGLAND,
Makers and Patentees of
HECKLING, SPINNING, LAYING,
And other Machines, for the Manufacture of
ROPE, LINES, CORD, TWINE,
19 19*] FISHING LINES, SPUN YARN, NETS, ETC.

TWENTY-FIVE PER CENT OF THE COST of Fuel saved annually by the use of Hair and Wool Felt as applied and for sale by JOHN ASHCROFT, 50 John street, New York. Send for Circular. 19 12*

BROUGHTON'S Compression GAGE COCKS
BROUGHTON'S GRADUATING LUBRICATORS!!
BROUGHTON'S TRANSPARENT OIL CUPS!
All warranted to be more simple in construction, easier to manage and keep in order, more economical, durable and effective than any others in the market. Send for illustrated catalogue to
17 4*] BROUGHTON & MOORE, 41 Center st.

TREATMENT OF SUGAR CANE.—The Subscriber, owing to his feeble health, would like to sell, or engage with parties for the sale or use of his process for extracting sirup from cane, patented Aug. 28, 1866. The sirup made by my Steaming Process is considered equal to Golden Sirup, and sells readily at the same price. With a single apparatus one man can prepare in one day enough for 75 gallons of sirup. The patent is unquestionably very valuable, and reliable parties can make favorable terms by immediate application to
18 3*] J. C. BELL, Patentee, Pawnee City, Nebraska.

H. M. LANE & CO.,
Rio de Janeiro, Brazil, Importers and Dealers in American Goods, give especial attention to the introduction of American Machinery, Agricultural Implements, etc. Having many years' experience, and large connections in the various Ports and Provinces of the Empire, they are enabled to obtain patents for, and dispose of, all kinds of American Machinery and Manufactures suitable to the country and climate.
Represented in New York by
18 3*] O. C. JAMES, 34 South st.

MAGNESIUM LAMPS
FOR THE MAGIC LANTERN;
Suitable, also, for
SKATING PARKS, SCENIC EFFECTS, TABLEAUX, etc.
Give a steady light, greatly superior in power and quality to the Calcium Light. Price, $35. AMERICAN MAGNESIUM CO.,
18 8*] 5 Liberty Square, Boston.

© 1866 SCIENTIFIC AMERICAN, INC.

Improved Metallic Cotton-bale Tie.

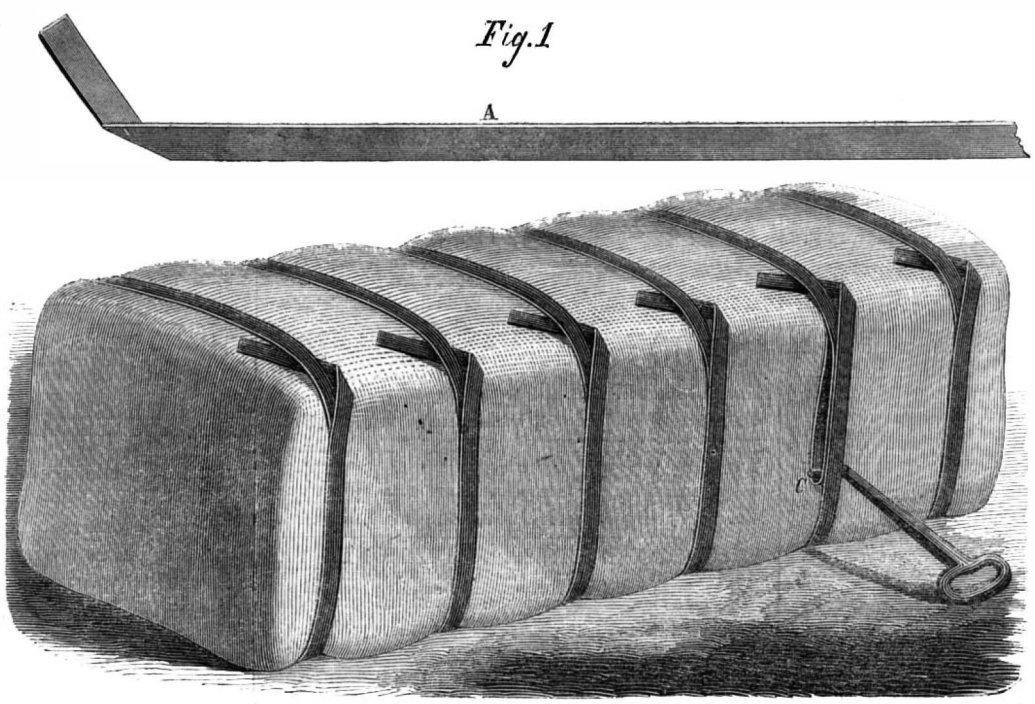
Producers, purchasers, and dealers in cotton understand the difficulties attending baling and re-baling by the use of the common rope ties. The rope must be large enough for the adequate strength, which makes it clumsy and inconvenient to handle, and its cost is quite an item of expense. The tie represented in the engravings is claimed to be cheaper, stronger, more readily applied, neater, and affords perfect facility for re-baling; and besides, in the matter of insurance, a great saving is made to the shipper.

A, Fig. 1, is the band or tie ready to be applied to the bale. It is a strip of thin metal—hoop iron—of the proper length, folded diagonally across itself near one end, in order to form a lap which engages with the enveloping portion. B, Fig. 2, is the tie, as it appears around the bale, ready for tightening.

The operation is simply to place the lapped part of the tie on the corner of the bale, pass the strap around, bringing it over the lap, and tuck it inside the main portion. The end may be turned up slightly, when, by inserting a common bale hook in the loop thus formed, as at C, the application of a little muscle draws the band very tight. This simple fastening is thorough and effectual. It cannot move and will not break.

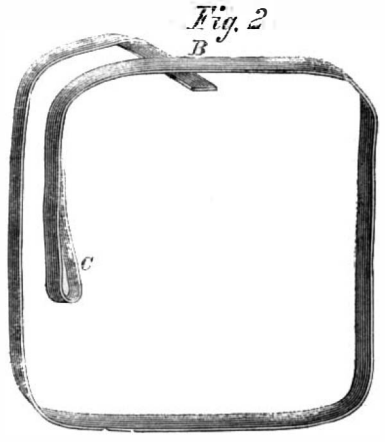
If the fastenings are to be loosened for re-baling. by pulling the looped end out from the enveloping portion with a bale hook, the tie is instantly unloosed, while it is in perfect order for being again used. There are no knots to make, no ropes to break, and no time to be wasted in securing a bale. This method has been used with great success at the general compress at Savannah, Ga.

Fig. 1



LEE'S METALLIC COTTON-BALE TIE.

Fig. 2



Patented through the Scientific American Patent Agency Oct. 16, 1866, by Z. W. Lee, Blakely, Early County, Ga.

Colors in Photography.

M. Niepce de St. Victor, in a paper addressed to the Academy of Sciences on the reproduction of natural colors by photography, describes a process for reproducing black, together with all other colors. The silver plate chlorized must be first dipped into a bath containing an ounce of an alcoholic solution of soda for every two ounces of water, to which a small quantity of chloride of sodium is then added. The temperature of the bath is to be 140 deg. Fah., and the plate is only left in for a few seconds, when it is taken out, washed, and warmed until it acquires a bluish violet hue. The plate is now coated with a varnish composed of dextrine and chloride of lead. In this way all the colors of the original, including white and black of more or less intensity, are reproduced according as the plate has been prepared, and as the blacks of the copy are either dull or brilliant.

Intensification of Negatives after Varnishing.

In answer to a correspondent, the editors of the *British Journal of Photography* furnish the following process, by which a negative, almost worthless from want of density, can have its printing qualities greatly improved. Place the plate in a dish containing methylated spirits of wine; then by gentle agitation the varnish will dissolve off, leaving the picture in a condition for being intensified to any extent, either by the deposition of silver in the usual way, by means of pyrogallic acid, or by being converted into a more adiactinic substance, which may be effected in various ways, one of the simplest consisting in pouring over its surface a tincture of iodine.

The same paper publishes a formula for the preparation of negative varnish, cheap, durable and having no tendency to crack. It is composed of methylated alcohol, 5 ounces; gum sandarac ½ ounce; when the gum is dissolved castor oil must be added in the proportion of ten drops to the ounce of varnish. If found too thick it must be thinned by the addition of alcohol.

Spontaneous Explosion of Kerosene Oil.

From a correspondent in Salem, Mass., we have received an account of the explosion and burning of kerosene oil in that city, accompanied with the loss of one life, that of Mr. William Gray. The circumstances, as related in the local prints, and in our correspondent's letter, are briefly these: The oil was being drawn from a barrel in a portion of the store separated from the other portion by an iron door. Several bucket-fulls had been drawn and emptied into a tin canister, when it flashed up, instantly setting the store on fire. This was in the day time, about noon. From one statement it is evident that the iron door was not closed until after the fire occurred. It is claimed that there was no fire of any sort in the vicinity of the oil.

Our correspondent desires to know if kerosene can ignite and explode without the agency of fire. We answer: Decidedly not. We believe that a rigid investigation into the circumstances of this occurrence would show that open fire was in the vicinity. The gas rising from some qualities of kerosene is highly volatile, explosive, and inflammable, and fires have occurred by its ignition at a distance of forty feet from the oil which generated the gas.

Important Patent Case Decided.

The case of E. D. Jordan in equity *vs.* the Agawam Woolen Mill Co., which was argued before Judges Clifford & Lowell, in May last, was decided in favor of the complainant, as the owner of the Goulding Patent All Woolen Machinery, by a decree sustaining the patent, and ordering a perpetual injunction against the sale of the machinery. This is a final decision of a case which, in its effects, is one of the most important ever argued in this circuit.

Gaining Power by a Lever.

A correspondent, J. B., asks: "Is there any power gained by connecting the piston rod of a horizontal engine with the middle of an upright lever, pivoted at one end, and connected by a pitman at the other end with the crank?"

The diagram accompanying the letter represents the piston rod of an engine of twelve inches stroke, which, being connected with a lever twenty-four inches long, at the center, gives motion, by a connecting rod, to a crank as long as the full stroke of the engine—twelve inches. Certainly there can be no gain of power in such an arrangement. The lever is one of the third class, where the power is applied between the fulcrum and the weight to be moved. On the contrary, there is a loss of power by friction, which, in this case is considerable, and no advantage—unless the increased length of the crank may be supposed to be advantageous. It must be evident that if the piston rod, or power, instead of being applied to the center of a vibrating lever, to actuate a weight removed twelve inches from that point, was attached directly to the end of the lever, at the point of resistance, it would require less power to overcome that resistance. The further from the weight and the nearer the fulcrum the power is applied, the greater the resistance and the less the effective power.

MECHANICS

INVENTORS, MANUFACTURERS.

The SCIENTIFIC AMERICAN is the largest and most widely circulated journal of its class in this country. Each number contains sixteen pages, with numerous illustrations. The numbers for a year make two volumes of 416 pages each. It also contains a full account of all the principal inventions and discoveries of the day. Also, valuable illustrated articles upon Tools and Machinery used in Workshops, Manufactories, Steam and Mechanical Engineering, Woolen, Cotton, Chemical, Petroleum, and all other Manufacturing Interests. Also, Fire-arms, War Implements, Ordnance, War Vessels, Railway Machinery, Electric, Chemical, and Mathematical Apparatus, Wood and Lumber Machinery, Hydraulics, Oil and Water Pumps, Water Wheels, Etc., Household, Horticultural, and Farm Implements—this latter Department being very full and of great value to Farmers and Gardeners, articles embracing every department of Popular Science, which every body can understand and which every body likes to read.

Also, Reports of Scientific Societies, at home and abroad, Patent Law Decisions and Discussions, Practical Recipes, Etc. It also contains an Official List of all the Patent Claims, a special feature of great value to Inventors and owners of Patents.

Published Weekly, two volumes each year, commencing January and July,

Per annum.....$3 00
Six months.....1 50
Ten copies for One Year.....25 00

Canada subscriptions, 25 cents extra. Specimen copies sent free. Address

MUNN & CO., Publishers,
No. 37 Park Row, New York City.

Messrs. MUNN & CO. have had twenty years' experience in procuring Patents for New Inventions. Inventors who may have such business to transact can receive, free, all needful advice how to proceed.

FROM THE STEAM PRESS OF JOHN A. GRAY & GREEN.

© 1866 SCIENTIFIC AMERICAN, INC.